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## The Modification of Smoking Behaviour: A Research Evaluation of Aversion Therapy, Hypnotherapy, and a Combined Technique

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THE MODIFICATION OF SMOKING BEHAVIOUR:  
A RESEARCH EVALUATION OF AVERSION  
THERAPY, HYPNOTHERAPY, AND A  
COMBINED TECHNIQUE

by

HERMAN SURKIS

A Thesis  
Submitted to the Department of Psychology  
In Partial Fulfillment of the Requirements  
for the Degree of

Master of Arts

Wilfrid Laurier University  
Waterloo, Ontario  
Canada

May, 1977

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## ABSTRACT

This study compared aversion therapy, hypnotherapy, and a combined method. It was predicted that the treatment of imagined behaviour would generalize to overt behaviours. Individuals were randomly assigned to one of three groups: the aversion group with shock contingent on imagined behaviour, the hypnotherapy group with imagined punishment contingent on imagined behaviour, and finally the combined group which consisted of traditional hypnotherapy in combination with aversion therapy. The treatments were contained on separate cassettes with each subject receiving his appropriate cassette. Subjects met in groups of 3-5 individuals, twice a week for three weeks. Individuals acted as their own controls through the establishment of a pre-treatment baseline of smoking rate. The data were inconclusive for the aversion and hypnotherapy groups. The combined group showed a significant change over the treatment sessions ( $p < .01$ ). An analysis of covariance showed that pre-treatment smoking rate was an effective predictor of the final smoking rate ( $p = .0015$ ), and the type of treatment was also an effective predictor of final smoking rate ( $p = .006$ ). The only incidental variable that was found to correlate significantly with final smoking rate was the need to smoke in situations of nervous-irritation ( $r = .429$ ). Due to the success of the treatments, the use of

pre-taped treatments in a group context was shown to be a valid method for rapid and efficient therapy with a minimum of therapist/client contact. Several areas for future research were indicated. It was noted that shock intensity and effectiveness of relaxation should be examined in future research.

## ACKNOWLEDGEMENTS

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## INTRODUCTION

Since the early 1960's, there has been an increasing concern with the problems of smoking. This concern arose as a result of convincing data linking smoking to disorders such as lung cancer, heart disease, and emphysema. During the 1970's, this concern evolved into action, as it sponsored a host of programs aimed at withdrawal from smoking. Despite their singular intent, these programs varied widely in their approach. Some relied on education; others employed pharmacology. Some resorted to fear-arousing films and lectures, while still others put their faith in self-control.

However, despite the numerous withdrawal methods available, the tendency seemed to be toward an increased number of cigarettes being smoked, and an increase in the number of smokers, especially among the young (Hackland, Thornton, and Rootman, 1966). The ineffectiveness of these programs, plus the failure of informed individuals to quit by themselves, clearly indicated that knowledge of the dangers of smoking and increased negative attitudes were not sufficient.

After the Surgeon General's Report on Smoking and Health (1964) had concluded that the 'habitual use of tobacco is related primarily to psychological and social drives', it became clear that more attention

must be placed on the interplay of internal factors occurring in smoking behaviour.

### Behaviour Modification

The smoking habit is a consumatory activity which makes it difficult to detach the behaviour from the reinforcer, and thus presents a problem for alteration through Behaviour Therapy techniques. Nevertheless, it involves a specific target behaviour, occurring in frequent and discrete units which are easy to observe objectively and to measure before, during, and after treatment. The physiological dependency due to tobacco-contained drugs is minimal, certainly as compared to that found in alcoholics or hard-drug addicts who have been successfully treated with behaviouristic techniques (Bernstein, 1969). Also, the previously mentioned publicity and education has increasingly caused this behaviour to be seen as maladaptive. This will serve to remove or at least partially reverse social reinforcement, and make it an even more appropriate target for behaviouristic techniques.

One of the first major research attacks on the problem of helping smokers to quit came from the behaviour therapy approach.

✱ According to the behaviour therapy approach, cigarette smoking is partially maintained by observable environmental stimuli which elicit it and by the stimuli which it produces. Thus, it is considered to be maintained by a combination of reinforcer and antecedent stimuli.

The earliest research studies assumed that smoking was a learned behaviour which could be modified by the laws of learning. Therefore, it was believed that one way to extinguish smoking behaviour was to pair repeatedly the stimuli for smoking with noxious stimuli until avoidance behaviour was elicited.

Hot, smoky air blown into the subject's face has been the aversive stimulus in several studies (see Keutzer et al., 1968). Grimaldi and Lichtenstein (1967) studied the effects of this stimulus both when it was contingent on smoking behaviour and when it was not, and compared these effects to those of hot air without smoke when it was contingent on smoking. In order to counter the high drop-out rate frequently found in these studies, subjects were required to put up a deposit which was returned upon completion of the study regardless of outcome. (The deposit may have confounded the treatment effect slightly, but this would occur across all groups.) The subjects originally met in their groups and then received an additional seven sessions over a three week period. Results showed that all three groups significantly reduced their smoking rates by the end of treatment; but, at the time of the one-month follow-up, none showed rates significantly different from the pre-treatment baseline.

Ober (1968) compared aversion therapy, operant control, and transactional analysis with a no-treatment control group, all of whom received one hour sessions once a week for four weeks.

The aversion group utilized self-administered shock whenever they desired a cigarette, while the operant control group was on a self-operated schedule. Transactional analysis was based on a Freudian type of psychotherapy. Results at the end of treatment and at a one-month follow-up indicated that the treatment groups had significantly reduced their smoking relative to controls, but all treatments were equally effective.

Marston and McFall (1971) report on a comparison between satiation, hierarchical approach to gradual reduction, a chemical aversion technique, and a control group that was simply told to quit. Two therapists were involved in treatment, and base rates were derived from cigarette by cigarette tally sheets rather than self-report estimations. All four groups significantly reduced their smoking with no between group differences, and at one and six-month follow-up, the rates were found to be increasing toward the previous base rates. They found a therapist effect which dissipated by the six-month follow-up.

The direct frequency data obtained from tally sheets was used to plot smoking reduction charts for each group throughout treatment. The graphs showed different curves for the chemical and control groups as compared to the experimental groups, even though the end results were the same. This technique makes their study one of the first to attempt an analysis of the actual process(es) involved in quitting smoking, rather than just studying outcomes. As important a contribution

as this might make, Lichtenstein (1971) criticized such an attempt prior to the demonstration of an actual outcome effect. Although this is a valid criticism, the technique of examining the active process(es), even in non-effective treatments, may lead to an understanding of these same processes and should aid in devising a truly effective methodology.

Two studies by Chapman, Smith, and Layden (1971) investigated punishment (shock) and self-management training as influences on smoking. In both studies, all subjects received a maximum of five aversion trials; however, their smoking behaviour was monitored for either two weeks or eleven weeks following treatment. Subjects had their deposits returned only after completing all of the study requirements, which included filling out and submitting regular questionnaires on their cigarette consumption for the full monitoring period. A one-year follow-up showed that twenty-five percent of the two-week group was still abstinent, while fifty-five percent of the eleven-week sample was still abstinent. The authors suggest that: 1. shock punishment combined with self-management training will, in most cases, eliminate cigarette smoking, and 2. that post-treatment therapist monitoring seems to be a significant variable in long-term cessation of smoking.

It should be noted that subjects were told that they were expected to quit smoking by the fifth treatment. The authors did not mention a possible deposit contract effect for maintenance of abstention (although

return of the deposit was not contingent on success) nor the possibility that the self-monitoring, to maintain continuous smoking rates, was also a variable affecting the long-term cessation of smoking.

Subject expectancy and deposit contracts have been found to influence or maintain results of experiments, and Katz, Thomas, and Williamson (1976) found that in a self-monitoring experiment, the "results showed that the reactivity of SM was determined by the expectancy variable" (p.533). Thus, from Katz et al. (1976), self-monitoring may not be an important variable, unless there is an expectancy that it will produce a therapeutic effect.

Whitman (1972) compared two aversive treatment groups with two control groups. The aversive stimulus was a chemical which, when ingested, produced a bitter taste in the mouth. This stimulus was administered when the subjects lit a cigarette; and it was used within either the context of group supervision and support or without group contact. Controls were either "waiting list" applicants or a random group of smoker non-applicants selected from the telephone book. The aversion groups and the waiting list controls all showed significant reductions in smoking by the end of the treatment period. The group aversives were significantly better than the other two, which did not differ. At a six-month follow-up, group differences had disappeared although they were still significantly below pre-treatment base rates. The non-applicant controls did not change their smoking behaviour over this

time period, which may indicate a relative stability and low spontaneous remission rate for this behaviour.

As the previous studies indicate, no behaviour modification technique has shown itself to be better than others for producing and maintaining desirable results with smoking behaviour. In fact, just about any form of treatment seems to produce the same or similar effects. Keutzer, Lichtenstein, and Mees' (1968) survey of the pre-1968 smoking literature comes to similar conclusions. Their report covers research on behaviouristic techniques, group and psychodynamic based therapies, drug and chemical interventions, and withdrawal clinic programmes. They concluded that,

While virtually all behaviour treatments of smoking compare significantly favourably to non-treated control conditions, they do not yield significantly better results than those obtained with either placebo attention control treatment...or with nonbehaviouristic modification treatments (p. 526)

However, it appears that the best of the clinics have produced results which are superior to the best of the behaviour modification studies in terms of immediate treatment effects (p.527).

It may tentatively be concluded that behaviour modification techniques seem clearly superior to the attempts at pharmacological intervention, inferior to the more effective techniques of the withdrawal clinics, and fairly comparable to the typical group therapeutic approaches...they have not shown marked superiority with smoking behaviour (p. 529).

Most of the studies surveyed here involved aversive conditioning of the punishment type and their lack of superiority raises doubts as to



the validity of these theoretical considerations. However, methodological and theoretical flaws in the application of behaviourist principles may well have been at fault in this lack of efficacy; they may have masked or distorted the true superiority of the treatment rather than proving the behaviourist theory to be wrong, or inefficient.

Lichtenstein (1971) pointed out that dealing with only reduction in smoking as the treatment goal may in fact be contributing to the lack of positive results. He observed that those who never quit smoking completely, or for any length of time, were much more likely to continue to smoke and to eventually return to their pre-treatment levels. Along with this, he was upset at the lack of systematic development in this area of treatment. Many studies, he reported, have rushed into a research application of a technique and have prematurely frozen such techniques into group therapies without sufficient prior investigation and clinical development. Mausner (1971), on the other hand, felt that the basic reason for treatment failure has been the lack of effective aversive control and the inadequacy of external contingencies; that is, once the subject is out of the reach of the aversive stimulus (out of the lab), it is easy for him to return to smoking. The problem of generalization to external circumstances is a factor in any application of behaviour modification; but, since generalization to the outside world has frequently been found to occur in the treatment of other symptoms, there is no reason to believe that this is a more serious problem with smoking

than with other behaviours.

The real problem seemed to be a lack of aversive control resulting from sloppy applications of behaviourist principles, as Lichtenstein (1971) indicated. Even when control was apparently established, it tended to extinguish, as noted by Grimaldi and Lichtenstein (1967) in their study, where "using hot, smoky air as an aversive stimulus... appears to be more effective than other punishing stimuli, such as shock...also compatible with electro-shock literature is the observation that, after a short period of time, the post-treatment smoking rate begins to return to the pre-treatment level" (p.281).

There were other problems with many of these studies which were basic to the task of establishing aversive control and to demonstrating properly the relative merits of the treatments being compared. For example, the aversive stimulus must be set at the appropriate level for each individual so that it is in fact aversive for all subjects. One must not declare, a priori, that a given stimulus will be aversive for all subjects; this must be determined individually before treatment begins. There was no evidence that any such individual determination was made in any of the foregoing studies. It would also seem that smoking frequency data should be collected via one or more relatively objective techniques, such as tally sheets or quantitative measures by some other party, although Ober (1966), using self-report methods, found a correlation of

+ .94 with reports of informants.

Another problem was the high drop-out rate in many studies (20-50%, when reported), which can be avoided by the effective technique of requiring a deposit which is to be returned upon completion of treatment regardless of outcome. If the deposit technique is used to reduce attrition, it might also be used to increase abstinence motivation concurrently with treatment via a threatened loss paradigm like that of Elliot and Tighe (1968). This might select subjects with a high motivation level; however, it remains clinically more effective as it insures treatment completion.

### Aversion Therapy

In an attempt to examine some specific factors of electric aversion therapy for cigarette smoking, Russell, Armstrong, and Patel (1976) randomly assigned seventy heavy smokers (32 cigarettes per day) to one of five treatment and control procedures: 1. electric aversion therapy, shocks contiguous with the smoking act, 2. simulated electric aversion, non-contiguous shocks, 3. non-shock smoking sessions to control for stimulus satiation and negative practice, 4. simple support and attention from therapist, and 5. non treatment.<sup>1</sup>

The findings were of interest from a practical and theoretical point of view. They found a stable aversion 'tolerance plateau', was quickly established (by the third or fourth set of shocks) and the effect

of treatment was extremely rapid, with most of the effect being achieved shortly after the first session with little improvement after the fifth or sixth sessions. A tendency for the smoking rate to rise was noted after session eight or nine. This was attributed to the subjects who failed to stop smoking completely. The members of this group began to return to their former rates. It was also found that the two groups (contiguous, non-contiguous shocks) showed no significant differences in their smoking behaviour. It was suggested by Russell, et al. that conditioning processes played little part in aversion therapy, such that aversion therapy was no more successful than a placebo effect. Also, the clinical response to aversion therapy was non-specific and attributable to other psychological factors and cognitive processes.

In the case of cigarette smoking, the electric aversion did not increase the placebo response above that obtained by therapist contact. This study also made the use of electric aversion therapy rather questionable on a theoretical basis. Nevertheless, electric aversion therapy was found to have a very rapid, although short-term, effect and this rapidity should be kept in mind.

Brenglemann and Sedlmayn (1975) attempted to compare the effects of various therapies while investigating the dynamics of smoking reduction and relapse. As well, they assessed the components of rate of smoking in terms of "personality, socioeconomic variables, and individual differences with regard to smoking behaviour and attitudes

towards smoking". Essentially, the aim was to answer virtually all the questions and problems concerning smoking treatments.

The authors devised a well-thought out and controlled study that eliminated many previous methodological difficulties. A number of different treatments were used for direct comparison; they closely examined the effects of treatment over a period of five months and the long-term maintenance for one year. The smoking rate was stated in terms of number of cigarettes rather than percentage of change scores. Several therapists were used and rotated between treatments to control for experimenter effect. Multiple baselines and control groups were used to establish a proper base of normative data. Motivational and volunteer effects were checked and contrasted and a deposit was used to reduce subject drop-out. Daily records of cigarettes consumed were kept for thirteen weeks, were averaged over each week, and turned into thirteen smoking scores.

A sample of 350 persons who smoked at least 20 cigarettes a day were treated by means of self-control (self-control only, self-control coupled with electric aversion), aversion (electric aversion, negative practice, covert sensitization) and non-behaviouristic therapies (psychotherapy, lobeline, placebo). A no-treatment control group was used. During the main therapy phase, 12 treatments were given in 6 weeks, followed by 4 booster sessions in another period of 13 weeks. Initially, there were strong positive treatment responses in the case of the non-behavioural techniques. These quickly subsided and considerable relapse occurred, even during the main therapy phase. In the long-run, the behavioural techniques proved superior, particularly self-control. Factors of smoking

behaviour and attitudes towards smoking correlate differentially with rate of smoking (p. 158).

It was also found that all treatments, including the mere recording of smoking rate, yielded a significant reduction in smoking; however, individual treatment curves varied to an extreme degree. The curves showed that on a long-term basis, the self-control method proved superior, followed by aversive therapies as a group, and finally by the other groups. Surprisingly, electrical aversion therapy had a comparatively slow initial effect, this would seem to contradict previous findings, and without the treatment design, it is difficult to evaluate this finding. However, it would seem that the extreme variance of the individual treatment curves indicates that the subjects are responding differentially to the different treatments.

Brenglemann remarked on the fact that the teachable therapies such as self-control and covert sensitization were among the most efficient. This showed promise, as, evidently, it may be possible to offer similar treatments to large numbers of clients by teaching them to become self-therapists. This would reduce to a minimum the amount of time and expense of personal contact with the therapist.

Many of these problems might be alleviated by taking advantage of the differential effects on subjects of the various treatments, and combining several treatments to produce one multicomponent treatment; in essence, a psychological 'broad spectrum medication'.

### Hypnotherapy

Many practitioners employed hypnosis in their efforts to modify smoking habits. However, their work was not conducted in an experimental context. There are, therefore, few research investigations into smoking cessation following hypnosis.

Groff, Hammett, Bash, Fackler, Yanovski, and Goldman (1966) treated subjects by four different methods in a controlled experiment. These were: 1. group psychotherapy, 2. hypnotherapy, 3. lobeline, and 4. librium. The results illustrated the superiority of hypnotherapy, with the success rates being: group psychotherapy--55 percent; hypnotherapy--100 percent; lobeline--29 percent; librium--33 percent. The pattern continued in a short follow-up, with hypnotherapy at 89 percent.

As mentioned, hypnotic techniques with smokers varied in the hands of private practitioners. An early and common technique was authoritarian suggestion. As practiced by Kroger (1963), the patients were hypnotized and then asked to 'imagine the most horrible smell and taste ever experienced' and to associate cigarettes with it. They were also instructed to imagine 'stinking bronchial tubes' and to smell stale ashtrays. Although the method closely resembled aversive conditioning, his reports of 40 percent success rate were difficult to evaluate since his treatments were restricted to a clinical setting.

A comparison of two methods of smoking reduction with hypnosis was conducted by Nuland and Field (1970). The older method was

characterized by its reliance on the depth of hypnotic trance and authoritarian attitude while ordering the subject to stop smoking. The therapist was seen as a controller and persuader. Now hypnosis takes on the new role of facilitator, not treatment. Rather than relying on depth of trance or direct suggestion, the therapists were seeking to amplify and feed-back the client's own reasons for wishing to quit smoking. Hypnosis was used to obtain a commitment to quit smoking.

Their results found that 25 percent of patients treated by the old, authoritarian method had quit smoking for six months or better, while the new method had a 60 percent success rate. Although only a post-hoc analysis of clinical data, it seemed to indicate an improved effectiveness when hypnosis was used as a facilitator.

Watkins (1976) used a similarly individualized treatment method in that a client's history was used to create specialized suggestions and fantasies which fed back an altered version of the client's own reasons for wishing to quit smoking. This was aimed at undermining rationalizations and reinforcing the person's commitment to stop smoking. 'Concentration-Relaxation' and autohypnosis techniques were fitted into a behaviour therapy (desensitization) procedure. After five sessions, 78 percent of those who finished the program had stopped smoking, and 67 percent were still abstinent after six months.

A well-documented investigation was presented by Hall and Crasilneck (1970). They examined the possibility of eliminating



cigarette smoking without undesirable substitution symptoms. They used a psychotherapy and desensitization technique to facilitate withdrawal during hypnosis. Seventy-five patients were seen for forty-five minutes over five sessions, with the first session being used to eliminate severe psychopathology and to describe the program. During the entire treatments, a forceful stand was taken by the therapist against the smoking habit, and this pressure was augmented by daily telephone reports and personal advice.

The success rate at a one year follow-up, "seems to be between 64% and 82%, depending upon the interpretation of 'success' as giving up cigarettes (82%) or completely avoiding tobacco (64%)". The authors emphasized that the results were questionable due to the pressure for success and the fact that "referring physicians frequently stated that these patients were critically ill and that their lives were literally at stake. Total abstinence from smoking was the only course possible..." (pp. 286, 287). There was a definite question as to whether the dominant factor for success was the high motivation and social pressure, or the hypnosis with psychotherapy. The extent of follow-up--one year--was remarkable when considered against an average of thirty days for most studies.

Kline (1970) treated a group of patients who had a history of being 'refractory' to treatment for smoking addiction. He treated the patients by means of twelve-hour group hypnotherapy sessions. During

the sessions, patients underwent hypnotic desensitization, contact (non-oral) with cigarettes, and hypnotic intensification of the need to smoke. This was followed by relaxation and hypnotically induced sensory gratification.

At a one-year follow-up of the sixty patients, who partook of the extended group hypnotherapy treatment, 88 percent reported that they were still not smoking, and the remainder reported a reduction in cigarette consumption. Kline concluded that, in view of cigarette smoking as a "complex psychosomatic phenomenon similar to other habituation disorders", the use of hypnosis in extended group therapy to reduce "psychophysiological manifestations of deprivation reactions" and its effectiveness in altering the characteristics of 'dysphonia' proved more effective than individual hypnotherapy (p. 279).

The major difficulty with Kline's treatment was its duration (twelve hours) and the need for a highly skilled therapist, who was qualified to handle the complex treatment and the strong emotional conflicts that might be aroused by the extended therapy.

Francisco (1972) studied the effects of hypnosis in comparison with a general relaxation method, a group discussion method, and a no-treatment group. The subjects were recruited by an advertisement of a "Free Smoking Clinic". Smoking history, demographic and motivational information were collected, as well as a self-rating of need for smoking under various situations. The subjects were randomly assigned to one

of the four conditions with each cell having twelve members. The goal of the treatment programs was complete abstinence from smoking, and this was used as the only criterion to determine change in smoking behaviour.

The results indicated that at the end of treatment, none of the treatment methods were significantly better than any other, but all were better than no-treatment. However, after a six-month follow-up, there was no longer a significant difference between treatment and no-treatment groups.

Using the six-month follow-up results, several differences were found between quitters and non-quitters with regard to the demographic and motivational factors tested: 1. a higher percentage of those whose parents did not smoke were able to quit than those with parents who did smoke; 2. living with another smoker greatly decreased the subject's chances of quitting; 3. the more a subject felt that smoking reduced his nervousness and tension, the less likely he was to quit.

It was also found that those who did not quit smoking rated their need for smoking in nervous-irritation situations significantly higher than those who did quit, while there were no differences in ratings of need for smoking in relaxation or social situations between quitters and non-quitters.

He concluded, as did other authors (Bernstein, 1968; Bernstein and McAlister, 1976), that factors other than the treatment factors play

an important role in determining the success or failure of trying to quit smoking. Despite a major methodological flaw, in that the relaxation treatments and hypnotherapy were almost identical, the findings of Francisco (1972) give cause for thought, the results being very similar to those found in behaviour therapy for smoking.

### Hypnotherapy as Behaviour Modification

The literature on behaviour therapy suggests that the use of hypnosis in connection with the application of learning principles is essentially limited to systematic desensitization. On the other hand, perusal of the hypnotherapeutic literature indicates that hypnotic techniques are being successfully used in conjunction with learning principles in a great many ways which clearly qualify as recognized behaviour therapeutic techniques. Recognition of this fact by behaviour therapists and hypnotherapists could be of considerable benefit to both groups if followed through (Weitzenhoffer, 1972, p. 71).

According to Weitzenhoffer (1972), a puzzling omission in the literature concerning the use of hypnosis in behaviour therapy is the section dealing with aversive techniques. This use of hypnosis is one of the oldest applications where the patient is told that the addictive substance (cigarettes, alcohol, drugs) would cause disgust or nausea. In fact, this method of "reconditioning" by hypnotically induced association of painful or disgusting stimuli, is a very current practice in hypnotherapy. In some cases, this method has even had the appearance of 'one-trial-learning' which makes it highly efficient.

Von Dedenroth (1964) described a smoking treatment which,

from a learning standpoint, combined various techniques, the dominant one being positive reinforcement. Through hypnosis, good feelings were associated with particular situations in which smoking was prohibited. To this were added competing activities in which the subject must indulge, in lieu of smoking, whenever he or she experienced the urge to have a cigarette. The previous steps of reciprocal inhibition and positive conditioning were also combined with aversive therapy.

The patient was asked to use, in sequence, brands of cigarettes which diminished on his preference scale, while being repeatedly hypnotized and made to associate smoking with its various negative aspects. The therapist later suggested that cigarettes would become less and less pleasurable until they actually became disagreeable. Finally, the patient was instructed, in and out of hypnosis, to abstain from cigarettes at certain times of the day on a schedule of progressively increasing abstention. Since abstention by this time was hopefully self-rewarding, operant conditioning as well as classical conditioning had been put to work. Unfortunately, accurate figures of results are not available, but this work is illustrative of an interesting use of combined methodologies.

Astor (1973) used a treatment of hypnosis combined with techniques of behaviour modification with psychoanalytic psychotherapy. The author based his combined therapy on the following assumptions derived from personal clinical observations.

Item 1. Hypnosis can be likened to a state of heightened suggestibility whereby the individual is able to use his learnings in the most efficient way to produce what he already knows at the right moment.

Item 2. Under hypnosis, the therapeutic experience is deepened and imagery produced by the patient seems more vivid and realistic.

Item 3. Regression is facilitated by the use of hypnosis, thereby allowing greater expression of the primary processes of the unconscious.

Item 4. Charismatic nature...situation is enhanced... increasing motivation and cooperation to work...

Item 5. Many patients are less threatened and less resistant...possible for them to by-pass defenses and gain the needed insight.

Item 6. ...possible to strengthen patient's ego... correct behaviour symptoms.

Item 7. Treatment time is telescoped...because of emotional intensity of the experience...(and the preceding items).

He aimed at a use of hypnosis under operant models of conditioning that emphasized positive and negative reinforcement. Hypnosis was combined with progressive relaxation, systematic desensitization, ego-building - self-integration exercises in the manner of psychosynthesis, with a final psychoanalytically-oriented psychotherapy. The subject was found to have recovered from her complaints and there was no relapse indicated at a one year follow-up. Astor concluded that hypnosis, when used as a 'therapeutic modality', combined easily with behaviour modification techniques, as both required motivation, readiness, and task

orientation.

Although this study suffered from many of the flaws previously mentioned, it was an interesting, albeit complex, method. If one gives credit to clinical experience, it could be said that Astor's evaluation of the success of his treatment was accurate, and this illustrated a successful multidimensional treatment.

It is worthwhile to note that: "Hypnosis experiments performed in association with behaviour therapy are certainly not infeasible, they simply have not been done" (Weitzenhoffer, 1972, p. 80). Within this context, it is intriguing that whatever the actual mechanism involved in hypnotic behaviour, certain commands and suggestions seem to create more or less lasting effects which overtly look like learned behaviour. Post-hypnotic suggestions given in hypnotherapy seem to establish responses to cues which resemble learning. Whether patients told to experience smoking as distasteful really have this experience, the fact remains that they respond appropriately over a long enough period for the aversion therapy to be considered successful. Often, these hypnotically induced associations have the appearance of learning in one trial, which both Guthrie and Skinner have maintained is possible (Hilgard and Bower, 1966). More often, however, one has to 'reinforce' the post-hypnotic suggestions through repeated statements to make them more effective. It might also be considered whether post-hypnotic behaviour instituted to occur indefinitely in response to certain cues does not

eventually evolve into habitual behaviour no different from other acquired responses.

Devoge (1975) makes Weitzenhoffer's previously quoted comment out of date. A treatment involving interactional group psychotherapy under hypnosis was combined with cognitive and affective restructuring and self-hypnotic training using visual imagery cues. The technique relied on the vividness of imagery and the facilitation of altering emotional sets with hypnosis to allow subjects to "learn more adaptive affective responses and rehearse more effective patterns of social behaviour". Four psychologists with an interest in hypnosis entered therapy as a personal adjustment or growth oriented group. The program consisted of weekly meetings of one hour over a six month period. No statement of success was made, but a behavioural analysis of the treatment was attempted.

Some of the conclusions of the behavioural analysis were as follows: client's verbalization of fears in a visualized situation, with a silent therapist, acted as an extinction procedure. The description and visualization of the client interacting in adaptive ways was taken as a positive reconditioning. Finally, the focusing on the one visual image symbolizing the positive emotional state that had been constructed would recreate the emotional feelings, thus pairing a visual image with an emotional set.

Although methodologically and theoretically, this study is badly



flawed, it represented an attempt at an integration of various fields. It is surprising that by 1975 better research methods were not in common use.

Generally, hypnosis appears to be a most successful technique as an aid for smoking withdrawal. Few other techniques have reported success rates as high as those reported by hypnotherapists, particularly after a follow-up period, although Kroger (1963) reported a 40 percent relapse unless treatments are occasionally reinforced. Unfortunately, little controlled research has been carried out using the hypnotic technique to help those who wish to quit smoking. Almost all of the results were from private practitioners who have reported their success using hypnosis in an unsystematic fashion. Little research has been reported on the variables involved in this type of treatment.

This brings about an interesting question of whether being hypnotized was the necessary and sufficient condition of the treatment which resulted in being able to quit smoking. This could be important, since it was demonstrated by Bernstein (1969) that the results of most smoking withdrawal treatments are explicable mainly in terms of the non-specific factors contained within them. He found that the sufficient conditions for initial smoking withdrawal in volunteer groups were such non-specific factors as: 1. participation in an experiment; 2. expectation of change; 3. suggestion; 4. contact with an experimenter. ;

Therefore, one might ask whether the treatments using hypnosis resulted in greater success because of such factors as: 1. those seek-

ing out hypnosis are highly motivated, particularly when treatment involves very high fees; 2. those seeking hypnosis are more suggestible; 3. those individuals are seen individually; and 4. the therapist has greater influence because of his reputation.

One answer to the question may derive from the extensive use of imagery in hypnotherapy, with the intense impact of hypno-imagery upon the mind.

Spanos and Barber (1974) commented that theorists seem to conclude that responsiveness to hypnotic suggestion involves a shift in set or orientation away from the pragmatic to one that involves imagining. It was felt that images were not 'conditioned sensation or quasi-perceptual' pictures in the mind, but active, albeit covert, behavioural processes similar to creative play acting or role playing. When an individual was imagining, he was 'acting as if certain events are actually occurring'.

It was implied that "subjects respond overtly and experientially to suggestions when they engage in involved, suggestion-related imagining. Such involved imagining is present when the subjects carry out, sustain, and at times elaborate on imaginings that are consistent with the aims of the suggestions" (Spanos and Barber, 1974, p. 505).

On the matter of reacting overtly and experientially to imagery, Haney and Euse (1976) examined fifty-seven college students for heart rate and skin conductance while in the process of developing neutral,

positive, and negative visual imagery. Controls were employed to check shifts in basal arousal level. The results, that positive and negative imagery produced and sustained high levels of skin conductance, and neutral imagery tended to reduce arousal below original baseline levels, all seemed reasonably conclusive (all  $p \leq .001$ ). However, heart rate was inconclusive. This seems to confirm the contentions of Spanos and Barber (1974).

### Imagery in Behaviour Modification

Hypnotherapy uses a great deal of imagery in treatment of various disorders, as can be seen in Kroger (1963), Kroger and Fezler (1976) and Haley (1967), and, in effect, there seems to be some theoretical justifications for the efficacy of imagery in behaviour therapies.

In 1965, Homme assumed that private organismic events follow the same behavioural laws as do overt events. He further assumed that operant conditioning paradigms can incorporate mental events as responses if only the frequencies are attended to and not the 'topography'. In a simple application of Premack's principle, he made a high probability behaviour contingent upon thought which was labelled as 'coverant'. Subjects were instructed, when having an urge to smoke, to think an antismoking thought ('self-produced suppression') and immediately followed it by a pro-nonsmoking thought (antagonistic opposite) before a high probability behaviour such as drinking a cup of coffee (reinforcement).

In the mid nineteen-sixties, Cautela (1975) developed a series of aversive imagery techniques for the treatment of a variety of maladaptive behaviours. The method consisted of the development of a series of extremely noxious images related to the unwanted behaviour. These noxious images were then presented in 'juxtaposition' with the subject's presentation of an image of the very desired behaviour. The imagery was so successful that some patients developed nausea, and Cautela considered the treatment highly successful. Similarly, he developed a series of techniques using positive imagery.

Cautela in later years turned to the control of smoking behaviour. The technique used involved noxious imagery paired with smoking behaviour in fantasy and 'thought shifting'. The patient was urged to say 'stop' when actually about to smoke or upon the temptation; at which point the patient was to imagine nausea developing into the urge to vomit. He reported that several studies using this method were extremely successful.

Cautela then proceeded to develop a series of techniques: covert sensitization (punishment) previously described; covert positive reinforcement, reinforcing events administered in imagery; covert negative reinforcement, based on the escape-conditioning paradigm, where the patient imagined an aversive scene which, when at its most vivid, the patient was asked to shift imagery, and to imagine the desired adaptive behaviours; covert extinction, the patient imagined vividly a

maladaptive socially reinforced behaviour and was then advised that there were no reactions from other people to this behaviour.

Cautela noted that many hypnotherapists use forms of covert conditioning. He also admitted that many of the studies he used to illustrate the high success rates for the techniques were either anecdotal or weak in methodology.

Kimble and Perlmutter (1970) pointed out, "empirical and theoretical works seems to insist on the usefulness and importance of the concept of images" (p.371). It is obvious that the use of internal stimuli in desensitization and deconditioning would be highly useful, as it is easier to make the subject imagine himself getting nauseous and vomiting than it is to make him actually become so through the use of some medication. Also, the potentially useful stimuli are limited only by the subject's imagination and his ability to control it on demand.

Hunt (1973) comments that there was an increasing tendency in behaviour modification to deal with covert stimuli in an open manner as "images". He continued that the various behavioural methods with addiction and dependency tended to go just so far in producing remission, and the relapse rate was rather high despite the type of technique used. It was also suggested by H. F. Hunt (in Hunt, 1973) that,

Based on clinical experience, it is the fantasy and imagery of the "reformed addict" that include a lot of material related to addiction. The behavioural and pharmacological treatments leave the fantasy and imagery basically untouched, thus

this behaviour tends to continue and later may act as a discriminative stimulus to reinstate drug taking and relapse.

Also, it was found by Paivio (1969) that imagery was highly important in learning and memory. The coding procedure seemed to be enhanced, also the 'concomitant' use of images helps in memorizing lists of sentences. It was stated that the significance for learning is as yet unclear, but as knowledge grows, the increased understanding of the cognitive processes and their imaginal counterparts will create new vistas of learning techniques. Nevertheless, little is known about the associational laws that govern the internalized imaginative learning processes, as they are difficult to identify and control.

As stated earlier, aversive therapy would seem to be the most useful treatment method. In fact, it is no better than any other treatment. Estes (1969) proposed a theory of punishment that may add light to the actions of imagery in therapy.

The principal assumptions are (1) that maintenance of any type of non-reflex behavior involves the summation of discriminative or conditioned stimuli with the input of amplifier, or facilitative, elements from drive sources, and (2) that the activation of negative drive systems by pain or the anticipation of pain reciprocally inhibits amplifier input from positive-drive sources. Thus, a stimulus which has preceded a traumatic event, e.g., shock...acquires the capacity of inhibiting the input of amplifier elements from sources associated with hunger, thirst, and the like. If, then, while the animal (subject) is performing an instrumental response for, say, food reward, this conditioned stimulus is presented, the facilitative

drive input will be reduced, and so also the probability or rate of the instrumental response (p. 80).

Berecz (1972) interprets this theory (Estes, 1969) to mean that cues which originally evoked the punished response become conditioned stimuli for a conditioned emotional reaction. This conditioned emotional reaction then directly suppresses the ongoing behaviour. Thus, imagining activates discriminative stimuli for smoking and also arouses the facilitative elements from drive sources ('amplifier elements').

It is felt that attempting to condition overt behaviours (of an addictive nature) is not as efficient as conditioning imagined behaviours. Once consummatory behaviour has been initiated, the input 'amplifier elements' from positive drive sources are in the process of being reduced. Also greatly reduced during consummatory behaviour are the discriminative stimuli associated with the 'amplifier elements'. The reduced drive sources and discriminative stimuli are not then available for association with the conditioned emotional response to aversion.

To condition overt behaviours and then to depend on generalization to the internalized amplifier elements is a very inefficient form of procedure. To punish overt smoking behaviour is inefficient since the linkage between the overt behaviour and the amplifier elements or discriminative stimuli which may have once initiated smoking, has become quite tenuous, especially in the case of the heavy smoker. It is felt by Hunt (1973) that as smoking becomes more habitual, a decreasing num-

ber of amplifier elements and original conditioned stimuli are likely to be present at the time consummatory behaviour is initiated. The act of smoking becomes more easily initiated until finally only a minimal number of elements is present with the behaviour. However, if the original elements are reactivated through the use of imagery, then the linkage is temporarily reestablished and the smoking behaviour again comes under the control of overt amplifier elements or stimuli. Then if a punishing stimulus is felt, the entire sequence of behaviour leading to smoking is suppressed (Berecz, 1972a). Thus, imagery, whether in hypnosis or aversive therapy, helps to reintroduce all stimuli upon which smoking behaviour is contingent and to bring these stimuli under the control of therapy.

The problem of maintaining the aversive stimulus as an aversive stimulus was very neatly solved by having the subjects themselves control the stimulus strength. To make the stimulus immediately contingent upon the strength of the imagined situation, the subjects self-administered the stimulus when the imagining was at its greatest strength. This novel method was used by Berecz (1972a) as hereunder described:

This study investigated the therapeutic feasibility of self-administered punishment of imagined behaviours. It was predicted that if imagined behaviours were punished, corresponding overt behaviours would be suppressed. Students were randomly assigned to one of five experimental groups. In one group, self-administered shock was contingent upon actual smok-



ing, while in another it was contingent upon imagined smoking. Additional controls were provided by placebo, wait, and minimal-contact groups. For moderately smoking male subjects, the imagined-smoking and actual-smoking treatments were both effective, but not differentially so. With heavy-smoking males, the imagined-smoking treatment was the only highly effective therapy. It was significantly more effective than the placebo ( $p < .05$ ) or actual-smoking ( $p < .001$ ) treatments, and it replicated (Berecz, 1972a, p. 244).

He also concluded that the major difference in the results between the moderate and heavy smokers may be due not to a difference in levels of awareness, but to the types of cues that are being attended to by the subjects. It has been found that obese persons attend to 'food-related' cues different from those attended to by normal eaters. So too may heavy smokers attend to different cues and have different and more complex imagery situations. This is highly compatible with Estes' previously stated theories of punishment. It would seem useful to have individuals imagine situations and cues which are closely associated with the actual act of smoking (as is often being done in hypnotherapy). He concluded that treatment might be enhanced by utilizing the period immediately following the cessation of shock for learning or rehearsing of new ('preferably incompatible') cognitions. Thus, if the individual imagined a situation of tension where he was smoking and then self-administered a painful shock, it may be useful to get him to relax immediately after cessation of shock (as per Lazarus and Wolpe). Thus, the aversive properties of shock would be used, and also the

positively-reinforcing properties of the shock cessation. "In a clinical setting, it would seem reasonable to attempt to enhance the treatment effects by utilizing the shock cessation period for new learning of behaviour incompatible with smoking" (Berecz, 1972b).

Berecz (1972a) proposed that for effective behaviour suppression to occur, the following conditions must be met:

(a) awareness or attention must be activated by imagining the target behaviour. (b) A contingent, self-administered shock should be experienced as painful. (c) This shock should be delivered as closely in time as possible to the most vivid imaginings. This situation, imagining, selectively activates the proper cognitions ('amplifier elements') for conditioning (p. 450).

Bernstein and McAlister (1976) mentioned that, recently, Berecz (1974) altered his methodology by having smokers shock themselves when imagining an urge to smoke, thus punishing even earlier components of the smoking response chain. Three subjects treated by the technique were abstinent two years after treatment, while three others who were shocked for imagined smoking behaviour relapsed to baseline. These findings, although inconclusive, indicate interesting areas for research.

The work of both Berecz and Francisco led this author to contemplate a therapeutic technique that would obviate the disadvantages mentioned by other researchers, while hopefully maximizing theoretical and practical advantages of the most efficient methods. That imagery is extensively used in successful hypnotherapy and was also used in be-

haviour modification led to a hypothesis that a treatment that combined both methods should hopefully prove highly successful, powerful, and quick. This concept once proposed required evaluation.

### Purpose of the Research

The purpose of this research was to develop a highly systematized technique for the modification of smoking behaviour. In fact, it was hoped that the technique would also prove useful in the treatment of other addictions or compulsions. The individual's fantasy and imagery might contain a great deal of material related to his addiction. What was needed was a treatment that would attack the central problem of these fantasies and images. This fantasy and imagery may continue after withdrawal and act as a discriminative stimulus to reinstate addiction and cause relapse. A way to reform the fantasy and imagery was to attack it through the use of imagery.

In dealing with smoking, many treatments have consisted of multicomponent packages. The multicomponent packages combined aversive control procedures with the individual's own quitting efforts. They were often aided by self-control and non-smoking skill tactics. Although these packages have not always proven successful, they did result in immediate abstinence rates of 65 - 100% with a relapse to only 55 - 65% after one year. The multicomponent approach appeared promising and warranted further research (Berstein, 1976).

As pointed out by Berecz, his method of self-operative treatment is a substantial time saver, even in a clinical setting with individual patients, and has the potential of offering to large numbers of persons a method of eliminating or reducing the frequency of unwanted behaviours. The theoretical aspects of the use of imagery in aversion therapy allow a neat interlock of hypnotherapy with aversive conditioning. In fact, the use of hypnosis, in which subjects could be easily trained, made the proposed technique highly flexible. It would intensify the strength of the imagery and the punishment, while relaxation training could be used in the aforementioned positive reinforcement after shock. Also, the hypnosis would facilitate self-administered booster treatments by the subjects. Furthermore, hypnotherapy could be given in group sessions (see Kroger, 1963; Haley, 1967) and thus this technique (combined) would be feasible in group sessions.

The following techniques were used to examine the previous questions. A form of aversion therapy with imagery (as per Berecz, 1972a) was employed with a smoking image being punished by shock and a non-smoking image being rewarded by deep relaxation. Traditional hypnotherapy punished a smoking image with an aversive image and rewarded a non-smoking image with relaxation. A multicomponent technique (combined therapy) was devised to incorporate the best of aversive therapy and hypnotherapy. In the combined treatment, hypnosis was used to intensify the images and the relaxation. In the treat-

ment, a smoking image was punished by an aversive image which was followed by electric shock. A non-smoking image was rewarded by positive imagery and relaxation. The paradigm for this combined treatment was: punishment - negative reinforcement - positive reinforcement. Where the punishment was the aversive image and shock, the negative reinforcement was the knowledge that shock was avoided during the non-smoking image. Positive reinforcement consisted of the positive image (a non-smoking image should be self-rewarding to an individual desiring to quit) and the deep hypnotic relaxation. All the therapies employed the technique of 'successive approximations' in their use of the images (actual smoking, to manipulation of the cigarette, to a desire for a cigarette).

Having the treatments tape-recorded on cassettes would not only be important to eliminate experimenter effects in this research, but, if successful, immediately increased the general efficacy of the treatment by allowing a greater number of people to be treated within the same time period. The use of tape would allow clients to self-administer booster sessions at their own convenience without the need for a therapist.

In essence, the aim of the research was: (a) to evaluate the comparative efficiency of aversive hypnotherapy versus aversive conditioning; (b) to examine and evaluate the strength and rapidity of the proposed combined treatment; (c) to examine the possible efficacy of taped treatment programs.

### Hypotheses

In the present research, the following hypotheses were evaluated:

- (1) If the success of hypnotherapy and aversive conditioning is due to non-specific factors, then there should be no difference between the experimental groups.
- (2) If the success of hypnotherapy and aversive conditioning is due to specific, but undifferentiated, factors, then there should be no difference between treatment groups. However, all treatments should be significantly better than the base line rate.
- (3) If either of the primary treatment groups has success due to specific factors, then all treatments should be different from each other, with the most powerful method showing the greatest difference from the base line rate.
- (4) If the success of the primary treatment methods are due to specific and interacting factors, then the combined treatment group should show a significant difference from the other two primary methods. If the interaction is reinforcing, then the difference should show the treatment to be more effective than either of the primary methods.
- (5) If using taped treatments is a valid method, then at least one of the experimental groups should show a significant difference from the baseline rate.

## METHOD

### Subjects

Forty-two (42) subjects were recruited through advertisements placed in: a) the student newspaper, b) posters in various parts of the campus, and c) word of mouth.

An applicant's participation in the clinic required that he or she meet the following qualifications: 1) must be available for all sessions, 2) smoked for more than one year, 3) must inhale, 4) over eighteen years of age (all volunteers were required to sign a waiver of idemnity form), 5) desire to quit smoking (see Appendix G).

At no time in the initial recruitment was hypnosis mentioned, only the fact of a smoking clinic.

### Apparatus

The treatment room was the language laboratory of the University, with the first row of carrels being used for the experiment. Subjects were placed in alternate carrels to minimize interaction during

the treatment sessions. A maximum of five individuals were treated at any one time.

The control and playback units were five (5) Audio Mate 590 audio/visual synchronization cassette recorders. These were basically cassette tape recorders incorporating cued stop and remote advance functions. The treatment tapes contained the voice instructions on one track and 150 Hz tape-stop command, as well as a 1 KHz advance (administer shock) command on the other two tracks. The command tones were inaudible to the subjects.

Shock was available to the appropriate subjects only during the 1 KHz command and at no other time, with the timing and gating functions of the shock being controlled by a standard 28 volt electro-mechanical module (one per subject). The tapes paused on the 150 Hz signal, and were re-started by the subjects depressing a button which simultaneously administered the shock if it was available. Each subject had an Audio Mate, a cassette with the appropriate instructions for the group, and a pair of full-cup monophonic earphones. The taperecorders were run on battery to avoid even minimal hazards.

The shock unit was derived from Siddal, Vargas and Adesso (1975) with the entire procedure following the safety constraints as



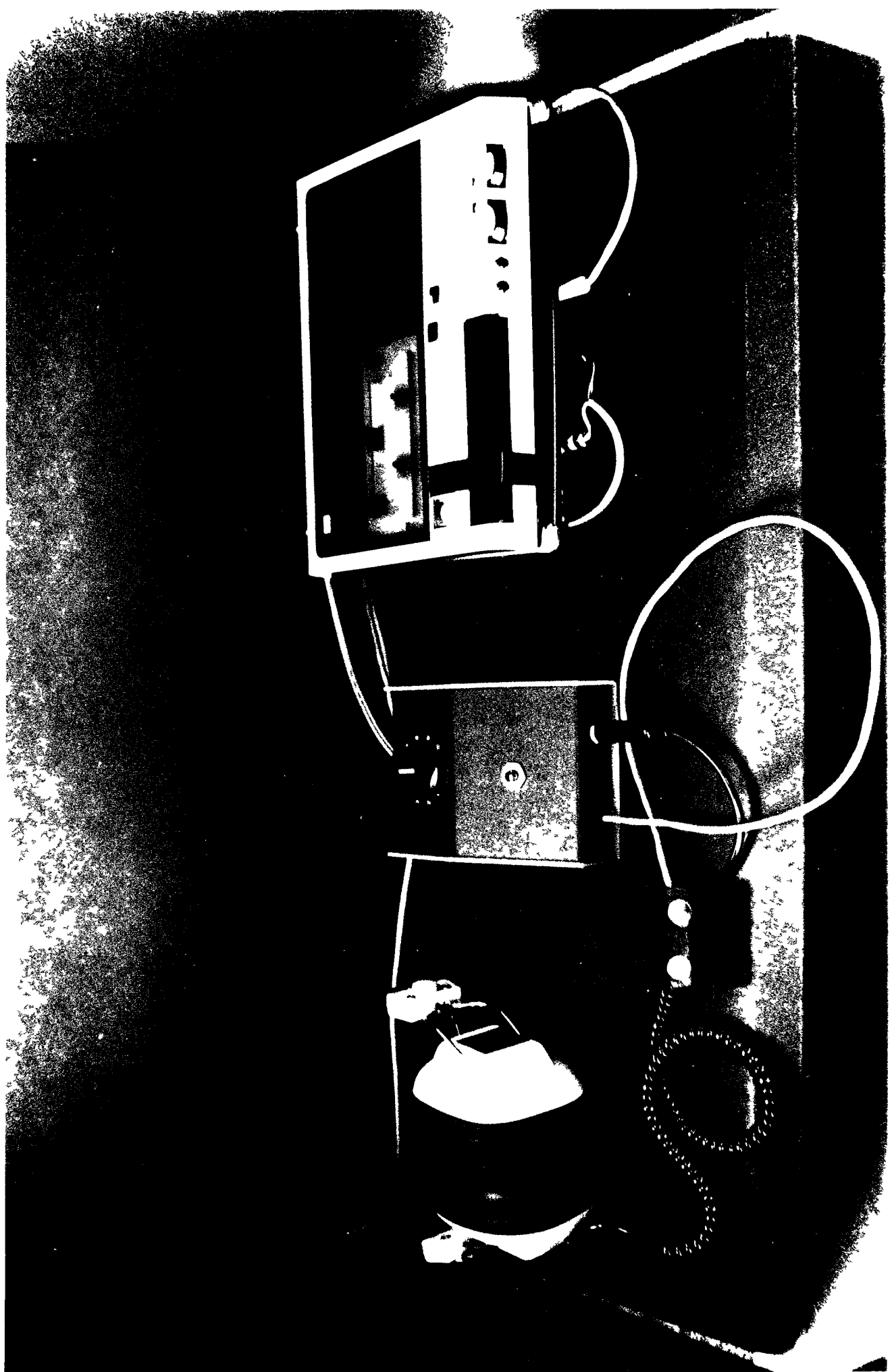
set out by Butterfield (1975). The shock delivery was shunted through a pulse former and thence to a timer. The electric shock was of 500 ms duration and a maximum of 3 ma. The relative intensity of the shock was controlled by the subject from a 0-10 point dial mounted on the same box containing the restart button.

The electrodes at the shock terminal were permanently affixed on tape in close proximity so that they had to be applied to the same extremity and could not accidentally create any currents across the thorax. See Figure 1 for an example of the apparatus available to the subject.

All subjects were given daily tally sheets (a modification of a tally sheet originally devised by Marsden and McFall (1971),) and a pocket recording booklet to record a baseline smoking rate and treatment progress. The booklet is "The Smokers Aid to Non-Smoking: A Scorecard (1972)", put out by the U.S. Department of Health, Education, and Welfare. The booklet contains a daily record keeper with encouraging suggestions in a pocket booklet form. The tally sheet was a sheet the size of a cigarette package, with instructions to be wrapped around a cigarette package and for each cigarette smoked to be checked off the sheet.

The "Stanford Hypnotic Susceptibility Scale: Form A and B" by E. R. Hilgard and A. M. Weitzenhoffer (1962) was used. This test was given to all subjects at the end of the clinic, since it consisted of a hypnotic induction procedure and may have given hypnosis practice to

FIGURE 1



the non-hypnosis group. There is no practice effect with this test or with the general use of hypnosis. Therefore, the test results should be indicative of the initial hypnotic susceptibility. The authors of the test claim a 0.74 pre-post test reliability.

The first 'Smoking Questionnaire' given out at the initial contact, was a self-rating scale developed by McKennell (1970) measuring the need for smoking in various situations. The rating is on a four-point scale in eighteen different situations which are grouped in "nervous-irritation", "relaxation", or "social" situations. The last four questions were added to the McKennell scale to measure "addictive-need" to smoke. They were devised in personal communications with heavy smokers. The scoring is based on an intensity of need for smoking in each of the major situations (see Appendix H).

The 'Smoking Questionnaire II' was given during the groups' first sessions. This is also a self-rating scale found in "You Can Quit Smoking in 14 days" by Ross (1974). It measures the reasons for smoking. It is on a five-point scale in eighteen situations. These situations are grouped into six categories of need: "stimulation", "handling", "relaxation", "crutch", "craving", and "habit". Three additional questions were added (S, T, and U) to examine the addictive need (see Appendix H).

The 'Smoking History Questionnaire' attempted to elicit information on smoking history, demographic information, and attitudes to-

wards smoking. This questionnaire was given to all subjects prior to the first session (see Appendix H).

The timetable of availability was filled out at the initial contact, and from this, the treatment schedules were set up (see Appendix G).

The 'Waiver, Release, and Indemnity' was given out and signed at the first session. This is a release of indemnity as required by the University to protect both itself and the experimenter against any potential lawsuits (see Appendix G).

A letter of explanation was initially sent to all interested subjects with a timetable and questionnaires after which the first session was set up for each experimental group (see Appendix G).

The follow-up questionnaire was taken from Hall and Crasilneck (1970) (see Appendix H).<sup>2</sup>

### Method of Evaluation

As mentioned previously, some authors maintain that the number of cigarettes smoked is not a valid criterion for success measurement; it is felt that only complete abstinence is an adequate goal. Nevertheless, due to the small number of initial subjects and the small number to achieve complete abstinence, only the smoking rate after treatment and rate of reduction were used to evaluate the results of the treatments.

### Procedure

Individuals responded to the requests for subjects by giving their names, addresses, and telephone numbers to the experimenter, or by noting them on a central list. All individuals who responded were sent or given a package containing the covering letter, preliminary questionnaires, and timetable. When the material was returned, the subjects were sorted into the preferred time slots (when possible) and then randomly assigned to each of the three groups: aversive-imagery and shock group, aversive-hypnotherapy group, and aversive-imagery with shock plus hypnotherapy group. Because of the small number of subjects used, a check was made to see if the smoking levels were equivalent across the groups after randomization. No control group as such was used as each individual, by giving a pre-treatment smoking level, acted as his own control.

For the first session, the subjects came together by treatment groups and from that time on individuals came for treatment at specified times. At the first session for each group, the experimenter (re)introduced himself and explained some of the problems in quitting smoking. The volunteers were told that the focus of the clinic was to help them make a commitment to quit smoking to protect their bodies, and the treatments were to help them achieve their goals. The subjects were made aware of the other groups with the rationale of optimum group size, and that different treatments were necessitated for the research

(this was a recapitulation of the covering letter). The subjects were given the pocket booklets and tally sheets with explanations on their use, and the smoking questionnaire II; they were then requested to fill out all pertinent material. In the appropriate cases, the subjects were asked if they had any objections to the use of hypnosis and/or electric shock by a qualified person. This was followed by a quick demonstration of the apparatus used and the treatment techniques. Any questions were answered at this time.

At the following session, the subjects were then told that relaxation was part of the therapeutic process and they were to listen to a relaxation training tape and do as told (see Appendix B). The tape was then turned on and, at its conclusion, the subjects were thanked, completely familiarized with the equipment, and then dismissed. All the treatment groups received the initial relaxation training since:

- a) relaxation was used as a reward in the non-smoking imagery situation. It was essential that all subjects be able to at least minimally relax, quickly and deeply;
- b) it helped to balance relaxation and session times across treatment groups. For those individuals in the hypnosis group, the session consisted of hypnosis training.

A one-week interlude between the first session and the commencement of treatments allowed the establishment of base rates of smoking, after which treatments commenced. The rates (base and withdrawal)

were marked in the booklet and tally sheets. These were handed in at the first session of each week.

Each treatment session lasted from 35 to 45 minutes, depending on the individuals' rapidity in achieving maximal imagery. The induction and/or relaxation portion of the taped treatments was approximately eight minutes long. The treatment portion lasted approximately 25 minutes, with five punishments and rewards. Thus, five smoking images were punished and five non-smoking images were rewarded:

- a) a smoking imagery response was punished with aversive imagery or shock;
- b) a non-smoking imagery response was rewarded with pleasant imagery and relaxation.

All treatment groups had to press a button to re-start the tape when they achieved maximum intensity of imagery (pressing the button also delivered a shock in the appropriate cases). The subjects were asked at the end of each treatment session to indicate any difficulty in maintaining imagery when they had to think about pressing the re-start/shock button. It was found that any interference quickly disappeared and that the earphones helped eliminate extraneous sounds.

The treatment sessions were twice a week for each individual. Thus, four treatment sessions were received by each person, out of seven meetings. At the end of the last session, the subjects were asked their personal feelings as to the efficacy of the treatments and if



they had any suggestions. All subjects at this time were asked to continue with the smoking booklets, and they were advised that a follow-up questionnaire would be sent to them after about thirty days. They were told that they should return the booklet with the questionnaire, and were advised of the importance of faithfully returning the follow-up information (see Table 1).

### Aversion Imagery Group

The first session consisted of introductory information as to the purpose of the clinic, filling out of the questionnaires, and instructions on the use of the smoking booklet and tally sheets. The tape recorders, re-start button, and shock devices, etc., were demonstrated, with the experimenter illustrating the use of the intensity setting on the shock box, and the proper application of the electrodes. The experimenter self-administered a shock at full intensity (ouch!) to demonstrate the worst that could happen, while at the same time explaining that individuals have different tolerances to electricity, and what one may not feel, another may find painful.

That is why each of you will set the shock intensity to the maximum that you can comfortably tolerate. It must be set at your personal maximum, since if the electric stimulus does not shock you, then it has no aversive properties, and the therapy will be ineffective.

Questions were answered.

At the second session, the subjects were told that relaxation was

TABLE 1  
Experimental Design

Groups	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Weeks 7, 8, 9	Week 10
Aversion Imagery	Introductory Session 1	Record Baseline Smoking Rate	Treatment Session 2 Relaxation Training Session 3 Aversion Therapy and Record	Treatment Sessions 4 and 5 and Record	Treatment Session 6 and Record	Hypnotic Susceptibility Test and Record	No Contact	Follow-up Contact
Hypno-therapy	Introductory Session 1	Record Baseline Smoking Rate	Treatment Session 2 Hypnotic Induction Session 3 Hypnotherapy and Record	Treatment Sessions 4 and 5 and Record	Treatment Session 6 and Record	Hypnotic Susceptibility Test and Record	No Contact	Follow-up Contact
Combined Treatment	Introductory Session 1	Record Baseline Smoking Rate	Treatment Session 2 Hypnosis Induction and Relaxation Training Session 2 Combined Therapy and Record	Treatment Sessions 4 and 5 and Record	Treatment Session 6 and Record	Hypnotic Susceptibility Test and Record	No Contact	Follow-up Contact

Prior to week 1, subjects were in the process of signing up for the smoking clinic.

part of the treatment and to listen and do as told in the relaxation tape. After the relaxation training tape, the subjects were reminded not to smoke prior to the treatment sessions; they were asked to return at their specified time and were then dismissed until the following week.

The third session commenced with the subjects being given the appropriate cassette and being aided (if necessary) in making the proper connections of the tape recorders and shock electrodes. Once the subjects were comfortable, they were told to proceed with the taped treatment.

The treatment started with a short relaxation exercise and then proceeded with the imagery and shock, as per Berecz (1972) (see Appendix D). The imagery portion of the treatment started with the request to the subjects to visualize the situation as clearly as possible and when they achieve maximum imagery to press the button. They were told not to see it as if they were watching a movie, but to see and feel it as if from within themselves. Cautela (1975) (in his covert sensitization therapy), uses this form of verbalization, since it helps to make the image more meaningful and powerful. The taped instructions were such that the tape paused after the imagery instruction to allow individuals time to maximize the image--it did not re-start until the button was pressed.

The following sessions, four to six, were simply continuations of the previous treatment, with less experimenter contact as the sub-

jects became familiar with the equipment.

The final session was the Stanford Hypnotic Susceptibility Test, and the administration of this required that each subject be seen individually for one hour. After the test, the subjects were requested to continue record-keeping, thus finishing off the booklet, and to maintain their commitment to quit smoking.

After thirty days, the subjects were contacted for the follow-up data.

For an outline of sessions one and two, see Appendices B and D).

#### Hypnotherapy Group

The first session consisted of an introduction, familiarization with equipment, etc. Unfortunately, any opening discussion prior to the use of hypnotherapy had to be longer than that preceding a program of aversion therapy. This was necessitated to dispell any misconceptions concerning hypnosis before proceeding further (see Appendix C).

This was followed, in the second session, not by relaxation training, but by hypnosis induction through the "eye fixation-progressive relaxation" technique (Duncan, 1973; see Appendix E). The induction uses a variation on a "Technique on Group Hypnosis with Eye Fixation" by Kroger (1963, p. 91). It started with the following opening statement:

You may become hypnotized more quickly than others, and your eyes may close sooner. Should

this happen, pay attention only to those instructions that I will give that can apply to you with your eyes closed. Ignore anything I might say about your eyes which does not apply to you.

Kroger's instructions to his subjects were based on his belief that, if the eyes were already closed, the individual should be in a light stage of hypnosis. Therefore, if so instructed, they should easily be able to ignore any inappropriate instructions. After the opening statement, the induction proceeded with the full "eye fixation progressive relaxation" technique. After the induction and relaxation, the subjects were brought out of hypnosis by traditional means, with the usual suggestion for future speedy inductions.

The subjects were dismissed with the admonishment not to smoke before the next treatment, to fill out the booklet, and to be prompt for their next session.

The third session was a treatment session with the induction and minimal relaxation on tape (shortened variation of the induction by Duncan, see Appendix F) which was followed by the aversion hypnotherapy (Kroger, 1963, p. 274) with a variation in style to accommodate the five punishment, five reward sequence (see Appendix F). The beginning of the tape recorded imagery verbalization included instructions on form of visualization (taken from Cautela, 1975), and the instruction to press the re-start button at maximum imagery. There was no shock delivered with the pressing of the button. The following sessions, four to six, were

continuations of the previous treatment.

The final session consisted of the Stanford Hypnotic Susceptibility Test, followed by advice on the continued use of the pocket booklet and the maintenance of a personal commitment to stop smoking. After thirty days, the subjects were contacted for the follow-up data.

For an outline of sessions one and two, see Appendices C and E.

### Shock Hypnotherapy Group

The first session consisted of filling out of questionnaires, instructions on the use of the smoking booklet, and introductory information on purpose and use of the clinic. The rationale started with an explanation of aversive imagery treatment, followed by an explanation of the hypnosis treatments. This was a combination of both previous treatment forms, leaving out the inappropriate or redundant comments (see Appendices B and C). The demonstration of the apparatus was followed by the answering of questions.

Session two was "Eye Fixation Progressive Relaxation Induction Technique", in full, as per Appendix E. Session three commenced as for the other groups, with the exception that the cassette verbalization was a combination of both the aversive imagery and the hypnotherapy. Therefore, the aversive stimulus was the aversive imagery followed by the electric shock. The reinforcing stimulus remained relaxation and positive imagery. Thus, in this group, the shock was delivered with

the pressing of the re-start button (see Appendix F for full treatment outline).

The following sessions, four to six, were similar to the previous treatment; the final session being the same as for the other treatment groups.

#### Follow-up Procedure

The subjects continued to record their smoking rate in the booklet after the end of treatments. After 30 days, the experimenter contacted all subjects and either obtained the follow-up information on the telephone or made the questionnaires available. Since a number of individuals were negligent in their record keeping, only the final week's results were noted, not the interim data from the end of treatment to the follow-up.

## RESULTS

One way analysis of variance of all questionnaire items, hypnotic susceptibility score (HSS), and prior smoking rate (PSR) showed no difference between groups ( $F_s < 1$ ).

As seen in Tables 2 to 4, the 3 (groups) x 6 (sessions) repeated measures ANOVA shows: a) no treatment group effect ( $F < 1$ ); b) a therapy sessions effect ( $F=17.32$ ,  $df=5,120$ ,  $p < .01$ ); c) a group (1-3) by session (1-6) interaction ( $F=3.24$ ,  $df=10,120$ ,  $p < .01$ ).

A simple main effects analysis (Kirk, 1969) showed that the treatment group by therapy session interaction is attributable to changes over sessions for group 1 ( $F=4.22$ ,  $df=5,120$ ,  $p < .01$ ) and group 3 ( $F=17.78$ ,  $df=5,120$ ,  $p = .001$ ), but not for group 2 ( $F=1.80$ ,  $df=5,120$ , n. s.).

As well, an analysis of covariance on the follow-up smoking rate (FSR2) with PSR as the covariate, showed: main effect (group) was significant ( $F=6.4$ ,  $df=2,23$ ,  $p = .006$ ) and the covariate was significant ( $F=20.5$ ,  $df=1,23$ ,  $p = .0015$ ). Figure 2 illustrates the means for follow-up smoking rate (FSR2) when they are adjusted for prior smoking rate (PSR). Thus, PSR is a good predictor of FSR2 regardless of treatment method, but adjusting the means to compensate for PSR



TABLE 2  
Analysis of Variance, Repeated Measures

Source	SS	df	MS	F
<u>Between Subjects</u>				
Groups	283.046	2	141.523	1.00 n. s.
Subj. Within Groups	12824.691	24	534.362	
<u>Within Subjects</u>				
Session	1478.177	5	295.635	17.32**
Session and Group	552.628	10	55.263	3.238**
Session and Subject				
Within Group	2047.851	120	17.065	

\*\* p .01

Analysis shows that the three treatment groups: aversion therapy, hypnotherapy, and combined therapy, are not significantly different from each other ( $F < 1.00$ ). An examination across treatment sessions shows significant differences ( $F = 17.32$ ). Group by sessions analysis also shows significance ( $F = 3.238$ ).

TABLE 3  
Analysis of Variance, Repeated Measures  
Simple Main Effects

Source	SS	df	MS	F
<u>Between Subjects</u>				
Groups at PSR	55.340	2	27.670	< 1
Groups at TSR1	1.223	2	0.612	< 1
Groups at TSR2	24.832	2	12.416	< 1
Groups at TSR3	83.272	2	41.636	< 1
Groups at FSR1	259.499	2	129.750	1.256 n. s.
Groups at FSR2	411.512	2	205.756	1.992 n. s.
<u>Pooled Within Cell</u>		144	103.282	
<u>Within Subjects</u>				
Session at G1	360.285	5	72.057	4.22**
Session at G2	153.263	5	30.653	1.80
Session at G3	1517.263	5	303.453	17.78**
Session by Group	552.628	10	55.263	3.238**
Session by Subject				
Within Group	2047.851	120	17.065	

\*\*  $p < .01$

The treatment groups showed no significant differences of smoking rates when examined at prior smoking rate (PSR), treatment smoking rate 1-3 (TSR1-3), final smoking rate (FSR1) and follow-up smoking rate (FSR2). Treatment group 1 (G1: aversion therapy) shows an across sessions significant change ( $F=4.22$ ), group 2 (G2: hypnotherapy) shows no significant changes across therapy sessions, and group 3 (G3: combined therapy) also shows significant changes across sessions ( $F=17.78$ ).

TABLE 4

Analysis of Covariance, Follow-up Smoking Rate (FSR2)  
By Group With Covariate Prior Smoking Rate (PSR)

Source	SS	df	MS	F
Covariate PSR	1034.344	1	1034.344	20.490**
Main Effects Group	647.333	2	323.667	6.412**
Explained	1681.677	3	560.559	11.104
Residual	1161.050	23	50.480	
Total	2848.727	26	109.336	

Means adjusted for Independents and Covariates at FSR2

Group 1 = 17.38; Group 2 = 18.45; Group 3 = 7.45

The covariate, prior smoking rate, is found to be a good predictor of the follow-up smoking rate ( $F=20.490$ ). Group 1 = aversion therapy; Group 2 = hypnotherapy; Group 3 = combined therapy.

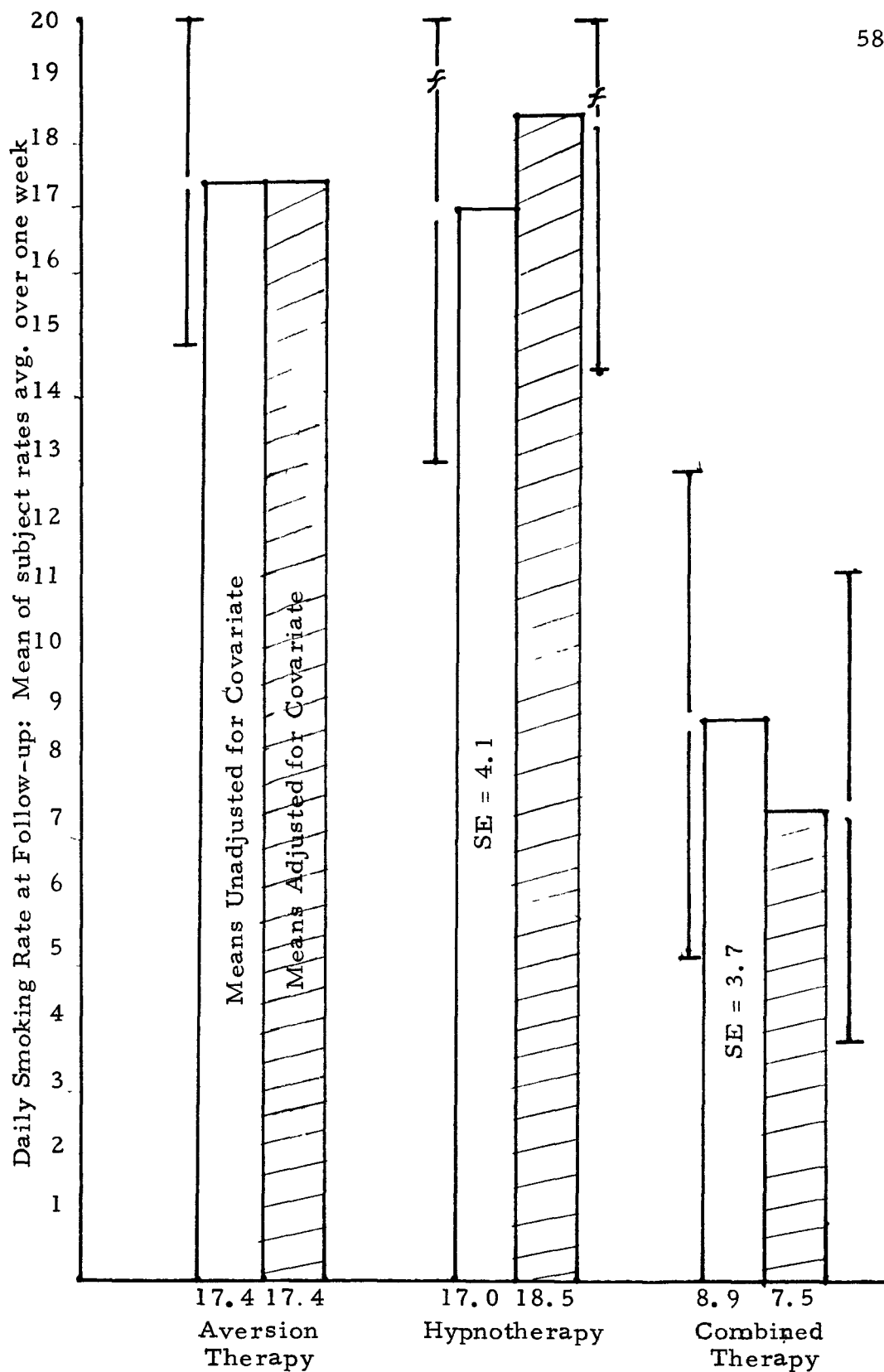


Figure 2. Means for the follow-up smoking rate. Means unadjusted for the covariate of prior smoking rate, and adjusted means. Aversion therapy standard error = 2.6; Hypnotherapy standard error = 4.1, Combined Therapy standard error = 3.7.

changes the results sufficiently to allow the treatment effects to appear.

When all the questionnaire items were correlated with final smoking rate (FSR1), FSR2, the only significant result was between the need to smoke in situations of nervous-irritation (NERV, see Table 5), with FSR1 ( $r = .395$ ,  $df = 25$ ,  $p = .022$  two tail) and FSR2 ( $r = .429$ ,  $df = 25$ ,  $p = .013$  two tail). Those who reported the strongest need to smoke when in nervous-irritation situations experienced the least success in smoking reduction. This finding is consistent with that of Francisco (1972) and Watkins (1976).

A chi-square test of independence (with dichotimized scores on quit/no quit) was not used since the expected frequencies were less than five (5) in over 20 percent of the cells. Although two or more degrees of freedom theoretically reduces the consequence of small expected frequencies, an expectation of not less than two in each cell is required<sup>3</sup> (Ferguson, 1966).

Table 6 illustrates that the rate of subjects dropping out of the clinic was balanced across treatment types, indicating a lack of specificity in the methodologies influencing the drop out rate.

The dependent variable 'rate of smoking' is expressed in terms of the number of cigarettes smoked per day averaged over one week. Prior Smoking Rate (PSR) corresponds to week two, commencing immediately after the introduction, and establishes the baseline. Treatment Smoking Rate 1-3 (TSR1-3) corresponds to treatment weeks three

TABLE 5  
Correlations of Variables  
With FSR1, FSR2

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Nervous-Irritation with FSR1	6 R = 0.395	P = 0.021 (df 25)
Nervous-Irritation with FSR2	6 R = 0.429	P = 0.013 (df 25)

---

No other variables (aside from smoking rates) were significantly correlated with FSR1 or FSR2.

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Nervous-Irritation (NERV) = score from Questionnaire II on the scale of a need to smoke in situations of nervous irritation. Final smoking rate (FSR1) = smoking rate at end of treatments. Follow-up smoking rate (FSR2) = smoking rate at follow-up, four weeks after the final treatment.

TABLE 6

## Drop-Out Rate

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<u>Signed up for treatment</u>	42
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Dropped out

1. Disturbed by the waiver	1
2. Decided not to quit and left between TSR1-FSR1	2
3. Pressure from exams and personal difficulties	5
4. Failed to return tally sheets	1
5. Missed treatments	2

Excluded

1. Stopped smoking prior to intro. session	2
2. Changed mind prior to intro. session	1
3. Dropped at random from combined group to equate number of subjects in all groups	1

Total at end of sessions	27
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Group	Signed- up	Intro	TSR1	FSR1	FSR2
Aversion		13	12	10	9 (10)*
Hypnosis		13	13	10	9
Combined		12	12	9	9
	<u>42</u>				<u>27</u>

---

\* A subject dropped to equate groups.

Intro = no. of subjects who participated in the introduction session at week one. TSR1 = no. of subjects who started treatments. FSR1 = no. of subjects to complete treatments. FSR2 = no. of subjects available for follow-up data.

through five, with TSR3 an exception, as it is only four days. Final Smoking Rate (FSR1) corresponds to week six, although the smoking rate is taken from the last day of treatment and three days following. Follow-up Smoking Rate (FSR2) corresponds to week ten, with the smoking rate averaged over the 28th to 34th day after the final treatment. Nervous-Irritation (NERV) is the score on a scale of the need to smoke in situations of nervous irritations. Hypnotic Susceptibility Score (HSS) is scored from the Stanford Hypnotic Susceptibility Scale.



## DISCUSSION

It seems evident that the Combined Treatment group (group 3) proved better than either Aversive-Imagery with Shock (group 1) or Hypnotherapy with Aversive Imagery (group 2). The success rate for quitting was 45 percent for group 3, 0 percent for group 2, and 12 percent for group 2, while the literature indicates a minimum of 30 to 40 percent withdrawal rate among all types of treatments, including control and placebo. This finding is in contradiction to the existing literature. However, on a measure of smoking reduction from baseline, it was found that Aversive Imagery therapy showed a 15.5 percent reduction, Hypnotherapy 14.6 percent, and the Combined therapy 61.8 percent. This is consistent with literature that found an average of 60 to 70 percent smoking reduction for most treatments (Bernstein and McAlister, 1976; Epstein and McCoy, 1975; Hunt and Bespalec, 1974).

In this experiment, on a criterion of complete abstinence, the most successful treatment did not prove superior to most other research found in the literature, while on a basis of smoking reduction, it did appear consistent with the success rates found in the literature (Bernstein, 1969; Bernstein and McAlister, 1976; Epstein and McCoy, 1975). In fact, an examination of Figure 3 shows that the reduction curve for the

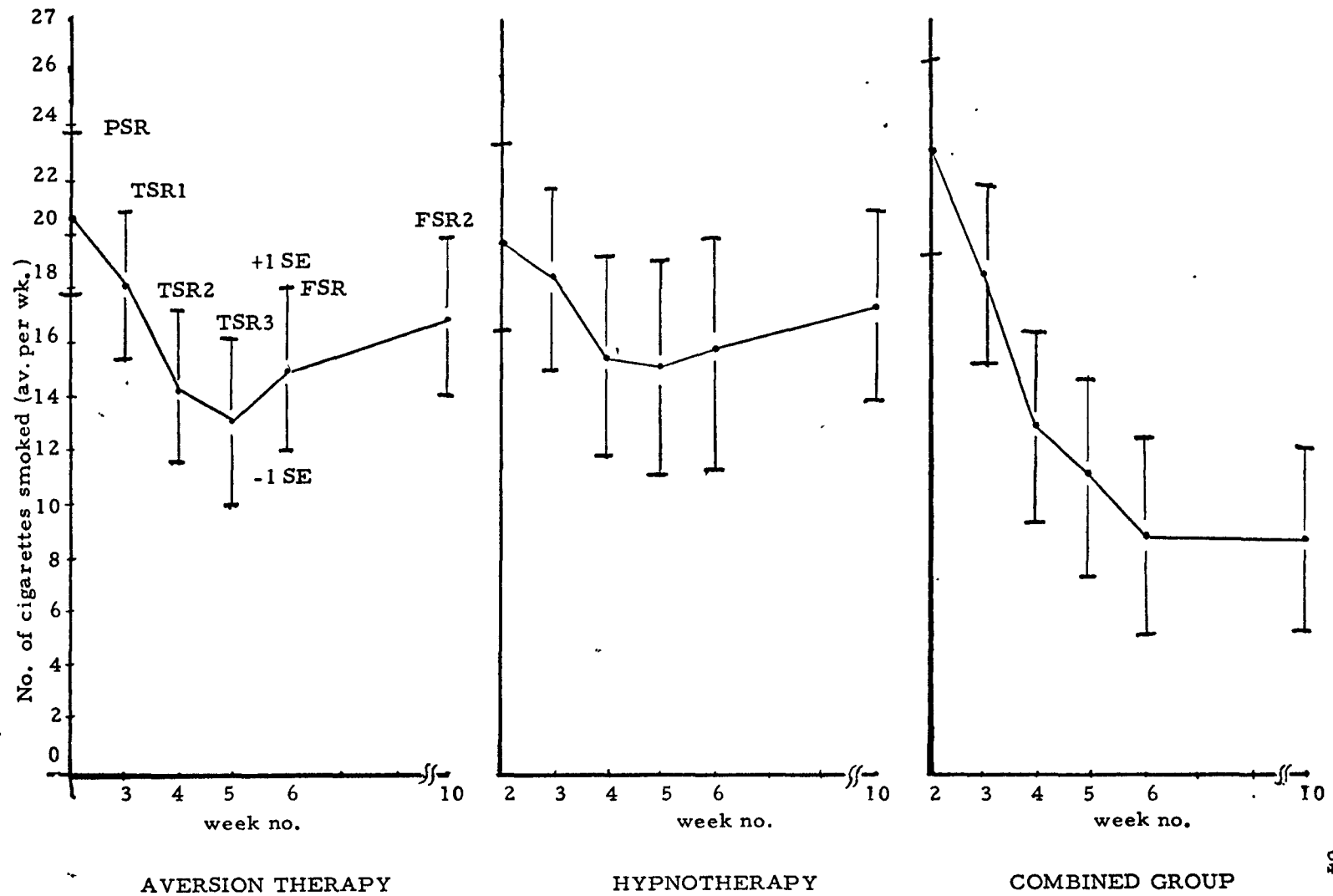


Figure 3. Mean average daily smoking rates for subjects by treatment group by week. Prior Smoking Rate (PSR), Treatment Smoking Rate (TSR1-3), Final Smoking Rate (FSR1), Follow-up Smoking Rate (FSR2).

combined therapy tends to stabilize over the 30-day follow-up period. This is superior to most other studies (Hunt and Matarazzo, 1973; Bernstein and McAlister, 1966). The other methods (groups 1, 2) were surprisingly ineffective. Hunt and Bospalec (1974) found that at the end of treatment and short follow-up, hypnotherapy generally had a success rate of 15 to 88 percent, and aversive conditioning showed a range of 0 to 100 percent success. One aversive treatment gave a 66 percent success rate at a one year follow-up. Berecz's (1972a) use of 'Shocking Imagined Behaviour', from which the present aversion treatment was adapted, yielded an 80 percent reduction in cigarette consumption after five weeks, certainly contradictory to the findings for this study. Nevertheless, the mean daily smoking rate over session curves (see Figure 3) are very similar to those of most previous studies, regardless of the type of treatment or addiction being considered (Hunt and Matarazzo, 1973; Hunt and Bospalec, 1974). The observed high relapse rate is common to most treatments (Hunt and Matarazzo, 1973; Bernstein and McAlister, 1976).

This finding of steepness of reduction curve with rapid relapse demonstrates that, while it may be relatively easy to effect an initial short-term reduction by various methods, it is difficult to maintain treatment gains. However, the levelling of the follow-up smoking rates for the combined treatment holds out hope for future research on this treatment.

An examination of a variety of variables found that only the need to smoke during a situation causing nervous-irritation correlated with success among the subjects. Although very significant, this was not a complete answer. Variables such as living with smokers or having parents who smoke did not correlate significantly with the FSR2, although Francisco (1972) found that with the preceding variables, quitters differed significantly from non-quitters. This inconsistency may be due to subject population differences, although Francisco also used a college sample.

It was found that a combination of aversive imagery with shock training, plus hypnotherapy in a punish/reward sequence (in a format of successive approximations, from smoking the cigarette to just desiring the cigarette) was more effective than the other two proven methods. An examination of the curve functions indicates that the dynamics of the treatments are the same as in previous studies for aversion therapy and hypnotherapy. The curve of the combined treatment indicates that this treatment may be more effective since it has a rapid and steady rate of smoking reduction with a levelling off from final treatment to follow-up.

The drop-out rate after the start of treatments, as seen in Table 6, was similar for all groups, and thus the methodologies cannot be said to have differentially influenced the subjects' drop-out rate to any great extent. In fact, from the comments of those who dropped out and those who completed the treatments, the major difficulty was the bad

timing of the 'Smoking Clinic', as it coincided with the end of term and its rush of major papers and exams. Recall that FSR2 correlated with smoking under the pressure of nervous irritation. If exams and papers can be assumed to increase NERV and if this increased smoking, and if high smoking rates lead to frustration with treatment and dropping out, then the drop-out rate may be explained by this (NERV) situational variable.

It should be mentioned that, as with most smoking and addiction therapies, several studies show high drop-out rates (Epstein and McCoy, 1975; Russell, et al., 1976; Watkins, 1976). This may be due (in the present study) to low motivation and commitment to the treatment and lack of personal effort to quit smoking. It has been suggested that deposit contracts might alleviate this type of difficulty (Bernstein, 1969; Bernstein and McAlister, 1976; Epstein and McCoy, 1975; Hunt and Bespalec, 1974), but the use of a deposit contract was not permitted by the university.

The effectiveness of the treatments, especially the combined therapy, shows that tape recording the therapy is a useful method for treatment. This indicates that a treatment could be constructed in a precise way and could be duplicated any number of times. Cassettes also greatly facilitate booster sessions and help eliminate the need for extensive therapist contact. Any therapist can duplicate the treatment by the use of the appropriate tape; this is especially important for

future research in validation studies. Validation studies can be done by requesting the original treatment tape. Experimenter bias is eliminated with pre-taped treatments as it becomes possible to give all subjects the same treatment.

The success of therapy with the tapes in group sessions indicates possibilities for large group therapy sessions. Again, this augments the efficacy of the treatment as it increases the number of patients that a therapist can treat at any one time.

In personal interviews at the end of treatment, many individuals stated that they felt that it was the wrong time of year to conduct the clinic, as they found the pressure from exams and final papers to be a real problem. Also, it was felt that they could have done much better had the clinic run for a longer time. One interesting point that came up during the post treatment interviews was that the individuals who quit or reduced by 50 percent found a lack of craving for cigarettes and a surprising lack of effort on their part to reduce or quit. In fact, this was most frequent for individuals who had made previous unsuccessful attempts to quit.

This lack of craving or effort to quit could be indicative of some of the processes involved in the therapy. In the aversive group, the shock, while known to be rapidly effective in reducing smoking (Russell, et al., 1976), may be acting on the image and act of smoking making them aversive. However, it may not be reaching the antecedent

'amplifier' elements and discriminative stimuli (Estes, 1969) due to the shortness of the treatment.

In the hypnotherapy group, the aversive imagery conditioning may be reaching some of the 'amplifier' elements, but the smoking habit is not being made aversive. In the combined group, comments made by four of the nine subjects were, that in the early sessions, the creation of the smoking image was pleasant and easy to do, while the non-smoking image was difficult and unpleasant. As treatments progressed, this trend was found to reverse itself. The smoking image became unpleasant and increasingly difficult to visualize. The non-smoking situation image was increasingly vivid and pleasant. At the same time, these effects seemed to generalize, as it was found that the desire to smoke dissipated and the occasional cigarette became aversive.

I was surprised when I discovered that I had not smoked for ten hours, and the most surprising thing is that I never even wanted one in all that time...I made no effort to not-smoke, just didn't feel like it.

This comment came from an individual who normally averaged twenty-six cigarettes per day.

For the combined group, the initial action may have been a growth in aversion to cigarettes due to the shocks, while the reinforcements built up the non-smoking image. Shortly thereafter, the imagery, intensified by hypnosis, may have started to act on the 'amplifier' ele-

ments and antecedent discriminative stimuli, thus facilitating the aversion. As the aversion increased, the conditioned emotional response may have disrupted the 'amplifier' elements thus eliminating the support for smoking. The disruption of the amplifier elements and antecedent discriminative stimuli may produce a reduction in craving for cigarettes as the non-smoking image is built up (Cautela and Rosenstiel, 1975; Singer, 1974; Smith and Delprato, 1976).

Essentially, if the desire to smoke is gone, then cutting back or complete withdrawal would require no effort on the part of the subjects. This is an important point, as any ongoing desire would require a constant effort to overcome and would intuitively indicate a high potential for relapse. It is unfortunate that more behaviour therapy research does not look at the subjective feelings of the individual for indications of the ongoing treatment processes. Many clues could be found from the subjects' comments (Sachs and Jacobs, 1971).

The present research seems to indicate that 'multicomponent treatment packages' (Bernstein and McAlister, 1976), with emphasis on the use of imagery and hypnosis, coupled to traditional behaviour therapy, may be a promising avenue of research. This is especially true of any therapeutic approach that may include techniques which the subject/client may self-administer in future booster sessions.

Future research in this area should determine if the shock levels being used are aversive enough.<sup>4</sup> This may be done by inter-



viewing the subjects and by recording the relative shock intensities being self-administered. Berecz (1972a) found that subjects increased the shock intensities both "within and across sessions", and concluded that highly motivated individuals, when asked to maintain the shock at aversive levels, will probably attempt to cooperate. Pain is a subjective phenomenon, and having the subjects control the intensity and self-administer the shock seems to be a valid way of determining aversive levels of shock in a clinical setting.

Investigation of the effects of relaxation on the subjects may be warranted. Subjects may be responding differentially to the instructions for relaxation, or the relaxation itself may be a pertinent variable for success.

In the present research, the results indicate the following:

1. The early success of aversion therapy and hypnotherapy indicates that the results were not due solely to uncontrolled variables.
2. The similar results of aversion therapy and hypnotherapy indicate that success was due to specific variables that conceivably were the same for the two treatments and probably similar to those producing success in most other behaviour therapy treatments.
3. The success of the combined therapy indicates a positive interaction of independent variables (the variables were derived from aversion therapy and hypnotherapy). Inherent in both hypnotherapy and aversion therapy are certain components which singularly or cumulatively are able to elicit a favourable response from a given subject. This larger number of variables in the combined therapy (multicomponent therapy) allows a greater probability for one or more variables to interact successfully with an individual. Establishing the nature of that interaction must be left for future research.
4. The relative success of the treatments indicate the validity of using group settings with pre-taped therapy. The style and content of these treatments would benefit from further refinement.

## FOOTNOTES

1. a) Electric aversion therapy; shocks given contiguously with the act of smoking. Electrodes were placed on the left forearm and an unpleasant but tolerable shock level was chosen. The subject was asked to smoke his usual brand of cigarettes. At any point in the act of smoking, from handling the pack to finishing the cigarette, an audible signal was given and this was followed by a shock. The shock was delivered in three out of four trials on a variable ratio schedule. The subject was instructed to discard the cigarette immediately on receiving the audible signal. Any hesitation in discarding the cigarette elicited a second shock ('rarely necessary'). Sessions were approximately 45-50 minutes and consisted of twenty trials.

b) Simulated electric aversion: shocks were non-contiguous with the act of smoking. The procedure was identical to the electric aversion therapy except that subjects received their shocks while they were not smoking. The subject was instructed to take and smoke a cigarette as soon as he heard the signal. Any hesitation would be shocked. Once smoking, there was no danger of shock; however, once the cigarette was discarded, the signal followed by shock could appear any time. After discarding the cigarette, as instructed, the subject anxiously awaited the signal and shock which preceded the next smoking trial. Again the shock was delivered on a variable ratio schedule. The structure of the treatment schedule ensured that the rest periods and smoking matched the true aversion and non-shock treatment sessions.

c) Non-shock smoking sessions; controlled for 'stimulus satiation' and 'negative practice' effects of lighting twenty cigarettes per session. The subject started smoking when instructed and discarded the cigarette upon receiving the audible signal. The seating arrangements were the same as those used during the previous sessions, except for the fact that the electrodes were not attached.

d) No-treatment; supportive counselling of subjects with encouragement to quit smoking. Therapist contact was 10 - 15 minutes of directive counselling with subjects reporting on their success at withdrawal.

2. Although strongly suggested in the literature review, a deposit contract was not required of the subjects in this experiment. Since the Research Ethics Policy of Wilfrid Laurier University states, "The right to free consent also involves the right to withdraw consent at any time during the research without penalty or cost to the participant", this unfortunately precluded any form of refundable deposit

contracts.

3. A 3x2 table of the present data shows three expected frequencies as 1.66. Chi-square of 3 (groups) x 2 (quit/no quit) -  $\chi^2 = 6.38$ ,  $df=2$ ,  $p \approx .05$ . Fisher's exact test of probabilities for individual 2x2 tables of the data: Fisher=(group 2,3)x(q/nq),  $p < .04$ , group 1,3 x q/nq, n.s., group 1,2xq/nq, n.s.

4. An attempt was made to record the relative shock intensities that the subjects self-administered. Unfortunately, some sessions were missed so that an analysis could not be justified. However, the data that were gathered indicated that no subject by group differences had occurred. Sex differences were found, with females administering noticeably smaller intensities than the males. This corresponded with the findings of Berecz (1972a, b), but it should be remembered that pain is subjective and pain tolerance varies among individuals. All subjects may in fact have self-administered equally aversive shocks.

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## APPENDICES

## APPENDIX A

TABLE 1

Mean Daily Smoking Rates for Subjects by Treatment Group:  
Combined Therapy Group

Subject	PSR	TSR1	TSR2	TSR3	FSR1	FSR2	NERV	HSS
1	13.4	12.1	9.9	8.3	7.4	0.0	12	12
2	16.3	11.7	3.9	2.2	0.0	0.0	14	1
3	14.3	13.4	10.6	0.0	0.0	0.0	8	9
4	26.4	24.2	1.0	0.0	0.0	0.0	12	11
5	28.6	17.3	11.3	9.0	9.5	8.2	9	3
6	19.3	15.1	14.1	12.8	10.9	16.8	16	12
7	14.7	6.6	7.0	10.8	0.0	5.2	11	12
8	44.9	33.3	28.6	21.3	20.2	21.4	12	6
9	31.7	34.0	31.4	35.3	32.4	28.6	16	10
Mean	23.3	18.6	13.1	11.1	8.9	8.9	12.4	8.4
SD	10.6	9.8	10.4	11.3	11.2	10.9	2.9	4.2

The dependent variable, 'rate of smoking' is expressed in terms of the number of cigarettes smoked per day averaged over one week. PSR (Prior Smoking Rate) corresponds to week one, commencing immediately after the introduction, and establishes the baseline. TSR1-3 (Treatment Smoking Rate 1-3) corresponds to treatment weeks one through three, with TSR3 an exception, as it is only four days. FSR1 (Final Smoking Rate) corresponds to week four, although the smoking rate is taken from the last day of treatment and three days following. FSR2 (Follow-up Smoking Rate) corresponds to week nine, with the smoking rate averaged over the 28th to 34th day after the final treatment. NERV (Need to smoke in situations of nervous-irritation) score from items 1-6 in Smoking Questionnaire. HSS (Hypnotic Susceptibility Score) is the score from the Stanford Hypnotic Susceptibility Scale.

TABLE 2

Mean Daily Smoking Rates for Subjects by Treatment Group:  
Aversive Therapy Group

Subject	PSR	TSR1	TSR2	TSR3	FSR1	FSR2	NERV	HSS
1	22.7	21.2	7.0	11.8	13.0	22.9	13	3
2	28.2	21.6	18.9	13.0	22.8	21.5	9	7
3	24.4	21.7	17.6	15.8	19.4	20.1	14	8
4	26.1	18.4	17.6	16.0	14.0	24.6	13	6
5	18.6	9.1	11.2	10.3	12.6	12.4	13	3
6	10.9	11.4	13.6	11.3	12.3	14.4	14	8
7	18.9	21.7	8.1	5.5	8.2	9.2	8	12
8	5.7	4.3	2.3	2.0	1.1	0.0	8	9
9	31.3	33.6	30.9	32.4	31.6	27.5	12	5
10 *	19.3	12.9	16.4	18.3	16.7	21.3		
Mean	20.6	18.0	14.0	13.5	15.3	17.0	11.6	6.4
SD	7.8	8.2	7.9	8.1	8.3	8.8	2.5	3.2

\* Randomly dropped from sample to equate groups for analysis.

TABLE 3

Mean Daily Smoking Rates for Subjects by Treatment Group:  
Hypnotherapy Group

Subject	PSR	TSR1	TSR2	TSR3	FSR1	FSR2	NERV	HSS
1	9.4	13.2	9.4	18.5	22.2	23.0	11	5
2	22.2	21.0	13.6	12.2	15.0	13.1	17	9
3	13.9	15.6	17.4	16.5	15.2	22.8	12	4
4	14.9	11.7	2.6	0.0	0.0	10.1	13	8
5	17.9	14.0	8.0	11.5	9.4	13.6	15	6
6	29.4	26.0	24.4	22.9	24.5	18.2	15	5
7	6.0	4.3	6.3	1.5	2.0	1.4	12	9
8	38.3	38.3	38.6	40.5	40.8	39.2	15	6
9	27.3	22.0	18.6	14.8	14.2	15.3	14	12
Mean	19.9	18.5	15.4	15.4	15.9	17.4	14.3	7.1
SD	10.4	9.8	11.0	12.0	12.4	10.6	1.7	2.1

## APPENDIX B

Outline of Aversion Imagery Treatment --  
Session One

Many psychologists believe that smoking is largely a conditioned habit; that is, a cigarette has become rewarding to you under special circumstances and from there it has become almost automatic that at certain times you need a cigarette. Thus, learning theory would suggest that if smoking is punished, then the desire to smoke should diminish.

Some theorists feel that if individuals are asked to image common smoking situations, then it will be possible by punishing the imaged smoking situation to attack the crux of the problem.

Thus, in this therapy, you will be required to imagine yourself in a smoking situation of your own choosing; when this imagery becomes most intense, you will be required to press a button to indicate this maximum intensity, at which time you will be given an electric shock that will punish your smoking desire. Incidentally, the pressing of the button will re-start the tape recording which will give you further instructions. As I will show you momentarily, you will personally set the intensity of the electric-shock to accomodate yourself.

(Demonstrate the application of the electrodes,

and the use of the shock box and tape recorder) ;

Different people have differing tolerances to electric shock; this is the reason each of you will set the intensity yourself. You must



set it to the maximum that you can comfortably tolerate. It must be set at your personal maximum, since if the electrical stimulus does not shock you, then it has no aversive properties and the therapy will be ineffective.

"Are there any further questions?

"Relaxation is part of the treatment we will be doing, so it is necessary for you to learn a proper relaxation technique. This has been put on tape for your convenience and you will be taught this technique at the next session."

(The subjects were dismissed, with instructions not to smoke, etc.)

## APPENDIX C

Outline of Hypnosis Treatment--  
Session One

What I plan to do is discuss what hypnosis is and how it has been used as an effective technique for handling a variety of problem behaviours, including smoking. What is hypnosis?

1. a combination of deep relaxation,
2. and concentrated attention on certain ideas.

The value of using hypnosis is that it permits a more direct way of communicating with the unconscious. Many of our everyday activities are controlled by the unconscious mind. Breathing, for example, is usually carried out without our consciously controlling it; however, at any time we can consciously control our breathing.

Hypnosis should not be associated with magic or occult. Stage use of hypnosis has given a poor picture of what hypnosis is and what it can accomplish. Hypnosis belongs fully in the field of normal psychology. Hypnotizing a person, you might say, is simply creating conditions which will help the person's conscious and unconscious trade places, for a short while.

Many people have fears about hypnosis:

Fear--imposition of will by hypnotist...cannot be made to do something against will

Fear--made to do something embarrassing...will not happen

Fear--won't remember what happened...if you want to, you can

Fear--afraid won't come out of hypnosis... special relationship be-

tween hypnotists and subject, if something happened to hypno-

tist, you would come out of trance, wake up automatically.

Since hypnosis demonstrations on stage or for an audience present a rather distorted picture of the value of hypnosis, I am going to briefly tell you of some of the uses of hypnosis.

A. Since hypnosis gives a person the ability to truly relax, it is helpful to a great number of persons who suffer from ailments that are brought about by excessive tension. Hypnosis has been used to cure ulcers;

1. peptic ulcers; 2. allergies; 3. high blood pressure; 4. insomnia.

B. Finally, hypnosis has also been very successful in curing people of undesirable habits; 1. tics; 2. excessive drinking; 3. overeating.

Everyone does not experience hypnosis in the same way, for most people, it is a feeling similar to falling asleep, however, without really falling asleep. Most people can be hypnotized to some extent and no matter how little it seems to them personally, they can benefit from it. For our purposes, hypnosis will be useful to help you learn to relax and to concentrate on the benefits of quitting smoking. Any questions?

(Demonstration of apparatus)

"A part of the treatment is knowing how to relax, so I want you at the next session to listen to a tape which will teach you how to relax while also teaching hypnosis. After the tape, if any time remains, I will answer further questions."

"Please be prompt for your treatment sessions at the assigned times, and please do not smoke for at least one or two hours prior to the treatment. If you should forget and do smoke, then at least let me know.

"Thank you, and I'll see you for the treatments."

## APPENDIX D

Deep Muscle Relaxation Training  
Instructions for Aversion Therapy  
Session Two

1. Preparation (10 minutes)

A. Information

In order to produce deep muscle relaxation, you need some basic skills. You need to be able to identify and locate muscle groups which you can relax, and you need to know how to relax the muscles. You can feel muscle tension through the kinaesthetic muscle senses, which are sensory nerves lying between muscle fibres, so that when a group of muscles tighten in use, the brain receives that information. That is how you can tell without looking at it whether your arm is bent or straight. The kinaesthetic muscle sense, then, lets you locate or identify by sensation the muscle groups we will work with when you tighten them. Unfortunately, you can't voluntarily make muscles relax because that is a passive letting go action. You can make the muscles tense, however, and then let go the tension, and that produces the sensation of muscle relaxation. What you will then be able to do if you know what a group of muscles feel like as they relax, is to imagine the sensation of muscle relaxation occurring, and, strange to say, it will occur.

## B. Preliminary Exercise:

Now, curl your toes tightly under, and notice the sensation of cramping or muscle tightness in the arch of the foot. That sensation locates for you where the arch of the foot muscles are. Now, ever so slowly, let your toes uncurl, and pay attention to what it feels like for the muscles of the arches of your feet to relax. Try to remember that sensation, for we shall use it later. Could you feel the relaxation action in the arch of the foot? If not, try again curling up the toes until you can feel the tightness in the arch, and then slowly let it go again. O.K.? Now raise your toes high off the floor with your heels still on the floor. Feel the tightness up the shaft of the lower leg, of the calf of your leg; and feel the stretching sensation in the muscles of the calf. Can you feel that? Good, now ever so slowly let your toes come down to the floor, and feel the sensation of the muscles of the lower part of the leg letting go. Can you feel that? Good, remember that. Now, the muscles of the upper surface of the upper leg are most tight just as you are about to sit down. Stand up, and then slowly sit down. Just as your seat touches the chair, the muscles of the upper surface of the upper leg start to let go. Notice how they feel as they let go. Have you got it? Good. The muscles of the inner surface of the upper leg are tightened by pulling your knees together against a wedge such as your two fists. Can you feel the tightness between your legs? Good, slowly let the pressure off, and notice the sensation of letting go in those muscles. Got it? Good. The

muscles of the underneath surface of the upper legs are tightened by, with your heels against the chair legs, trying to slide your seat forward off the seat of the chair. Can you feel that? Good, let your seat slide back on the chair, and notice the sensations of the muscles letting go. The muscles of the back are tightened by arching your back or pushing your stomach forward. Can you feel it? Good, now let the back sink back into the chair and feel the muscles relax. O.K.? Good. The muscles of the stomach and chest are relaxed merely by taking a big diaphragm breath, and then letting it all out, and blowing out all the air. A long out breath is the act of relaxation. The hands and fingers need no relaxation practice. We only use the hands to grasp with, so that the muscles of extension are almost never used. So it is enough to relax the hand by giving the fingers a big stretch, and then letting go. The muscles of the forearm are tightened by bending the wrist sharply inwards for the muscles of the inside of the forearm, and outwards for the muscles on the outside of the forearm. Try both for both arms, and notice what it feels like for the muscles to relax as your wrist straightens out again. Can you feel it? Good. The biceps are tightened by pulling toward you with one hand, and pushing that hand away with the other hand. Can you feel it tight? Now, let go slowly, and notice it relaxing as the arm straightens out all the way down. Can you feel it? Try it with the other arm too. The triceps are tightened by jamming the elbow out straight. Can you feel it? Now let it go, and notice the sensation of the

muscles relaxing. O.K.? The shoulders are tightened by first raising the shoulders up against the ears. Can you feel it on the top of the shoulders? Let the shoulders slowly all the way down, and notice the sensation. O.K.? Now pull your arms across each other across your chest, and notice the tension in your pectorals. Feel it? Good, let go, and feel them relax. Now try and touch your elbows together behind you and notice the tightness between your shoulder blades. When you can feel it, let go, and notice the relaxation sensations there. O.K.? Now to the forehead. Raise your eyebrows in a thoughtful way. Can you feel the tension in your forehead? When you can, let the muscles relax, and notice how they feel. O.K.? Now the worried one. Knit your eyebrows together, and notice the tightness. When you can, let go and notice the relaxed feeling. Good. All you need to do to relax the eyes is to let the eyes go out of focus looking far away, and then let the eyelids close. Now clench your jaw tight, and with your teeth clenched together, and notice the tension in your jaw up near your ears. When you have that, let the jaw go, and notice the sensations of muscle relaxation. Got it? Good. Now purse your lips and feel the tension around your mouth. Then let go. Got it? Good. Finally, push your tongue against the roof of your mouth and feel the tightness in your tongue. Got it? Now let your tongue fall to the floor of your mouth, and feel the relaxation. Could you feel it? Good. Did you have any trouble feeling any of the relaxation sensations in any muscle groups? (If so, repeat with those muscles.)



## 2. Relaxation (9-10 minutes)

Now, sit back in the chair. Put your heels together, and let your toes fall apart. That lets the knees fall apart so that the muscles between the legs can relax. Reach forward and down with your arms in order to pull your shoulders down, and then let the elbows fall to the armrests, and then twist them out a little. This lets the shoulders and arms relax. (If using a high-backed chair: ) Tuck your chin in, and reach with the base of the back of your skull as high up the back of the chair as you can, lay the back of your neck against the back of the chair, and let go. This stretches and relaxes the muscles of the back of the neck, which otherwise do not relax well.

Now, I would like you to think about the muscles of the arches of your feet, and let them go. Imagine that the sensation of muscle relaxation in the arch of the feet is occurring. And as you do, the sensation you will have is that your arches come down until they press lightly on the instep of your shoe, and you feel a bit flatfooted. Let go the muscles of the arches of your feet loosely. Let go. Think about the muscles of the lower part of your leg, of the calf of your leg, and let them go. Imagine that the sensation of muscle relaxation in the lower part of the leg is occurring, and as you do, the sensation you'll have is that your ankles feel loose, and your legs feel heavy on the foot rest. Let go the muscles in the lower part of your legs loosely. Think about the muscles on the upper surface of your upper legs and let them go. As

you do, the sensation you'll have is that your seat sinks deeply into the seat of your chair. Imagine that the sensation of muscle relaxation in the upper surface of the upper legs is occurring. Let go. Think about the muscles of the inside surface of your upper legs, and let them go. These are the muscles that were tightened by pulling your knees hard together, and as you relax them now, the sensation you'll have is that your knees feel as though they roll apart loosely on their sides. Let go the muscles of the inside surface of your upper legs. Imagine that the sensation of muscle relaxation in the muscles on the underneath surface of the upper legs is occurring, and as you do the sensation you'll have is that your legs feel heavy all over. Heavy and loose, heavy and limp; resting deeply into the seat the chair, and heavily into the footrest. Think about the muscles of your back and let them go. Imagine that the sensation of muscle relaxation of the back is occurring, and as you do the sensation you'll have is that your back sinks deeply into the back of the chair. Let go the muscles of your back loosely. Give your fingers a big stretch. Let them go loosely. Think about the muscles of your arms and let them go. Imagine that the sensation of muscle relaxation all up and down your arms is occurring, and as you do, the sensation you'll have is that your arms sink deeply into the back of the chair, and heavily into the arm rests. Let go the muscles of your arms loosely. Limply, loosely. Think about the muscles of your shoulders and let them go. Imagine that the sensations of muscle relaxation in the shoul-

ders are occurring, and as you do, the sensations you will have are that your shoulders droop down loosely, sag and droop; and that your shoulders sink evenly and deeply into the back of the chair. Let go the muscles of your shoulders loosely. Let your shoulders droop and sag. Let your shoulders sink back deeply into the chair. Take a deep breath into your stomach and chest and then let it go. At the end of the outbreath, push all your air out of your lungs, and completely exhaust your lungs. Breathe naturally. Think about the muscles of your forehead, and let them go. Push away all your thoughts and worries from your mind for the present. Let your forehead become smooth and calm. Concentrate only on relaxing your muscles. Let go the muscles of your eyes. Let your eyes go out of focus, looking far away; and let your eyelids close. Think about the muscles of your mouth and lips and let them go. Let go the muscles of your jaws. As your jaw muscles relax, the sensation you'll have is that your jaw droops down loosely until there's a small gap between your teeth. Think about the muscles of your tongue and let them go. Let the tongue rest loosely on the floor of the mouth.

## APPENDIX E

Eye Fixation Progressive Relaxation  
Induction Technique--Hypnotherapy  
Session Two

Instructions

Sit down and make yourself as comfortable as possible. I want you to loosen any tight clothing you might have on, such as belts, shoes, etc.

(Pause momentarily)

Now I want you to fix your gaze on some spot that is above and slightly behind your forehead so that you are almost, but not quite, looking through the ridge of your brow.

Keep your gaze fixed on this spot until your eyes close.

(Pause)

You may become hypnotized more quickly than others, and your eyes may close sooner. Should this happen, pay attention only to those instructions that are given that can apply to you with your eyes closed. Ignore anything that might be said about your eyes that does not apply to you.

(Pause)

As you watch the spot, you will soon notice that your eyelids will begin to get very, very tired--they will start to feel very, very heavy.

As they get tired and heavy, they will start to blink--they will start to blink more and more, more and more.

As your eyelids grow more and more tired, they become heavier and heavier.

You may notice that your eyes may start to water.

As they grow heavier and heavier, you will find that it will become harder and harder to keep them open.

As you watch, you may find that the spot tends to become blurred or it may tend to float around.

You may find that you have a tendency to swallow from time to time as you become more and more relaxed.

Your eyelids are becoming heavier and heavier, heavier and heavier.

Soon your eyes will want to close, to shut out the light. You will become much more comfortable and relaxed when you let your eyes close.

They are getting so very, very heavy--so very, very tired--you can hardly keep them open.

Heavier and heavier. Tired - so very tired.

That's right--they can close now, just let them close. Let your eyes close.

(Pause)

You are probably feeling a listlessness now, a drowsy, listless feeling. It is very pleasant to feel so listless and drowsy.

Let your self relax still more, more and more relaxed.

A feeling of well-being gradually comes over you as though all your cares have rolled away. As though nothing matters--nothing at all.

You are so listless now, so very, very listless.

Give way to the feeling, as it is so very, very pleasant.

Just let yourself go drifting deeper and deeper, deeper and deeper with every breath you take. With every breath you take you become more and more relaxed.

Pay attention now only to the sound of my voice--nothing else seems to matter. Nothing will disturb you or bother you. You will be able to hear what is happening around you, but it will not disturb you.

If anything important should happen, you will respond normally, but otherwise nothing will disturb you. You will pay attention only to the sound of my voice.

(Pause)

Let yourself relax completely. Let every muscle go loose and limp.

To help you relax even more, I am going to get you to relax all the muscles in your body. First of all, I would like to start off with your feet--let the muscles in your feet go loose, limp, and relaxed.

Now your calf muscles--let them go loose, limp, and relaxed.

Your thigh muscles--let them become loose, limp, and relaxed.

Your whole legs are now starting to feel very loose---very, very relaxed and very, very comfortable.

Now your stomach muscles--let them go loose, limp, and relaxed.

Let the chest muscles become loose, limp, and very, very relaxed.

And as the chest muscles become more and more relaxed, you will find yourself breathing more freely and easily and deeply.

With each and every breath you take, you are becoming more and more relaxed, more and more comfortable, more and more tranquil.

Now your shoulder muscles, let them go loose, limp, and relaxed.

Relax your neck muscles--let them become loose, limp, and very relaxed. As your neck muscles relax, you become more and more comfortable.

Just let your head achieve a very, very comfortable position--let it roll to one side, or fall back on the chair, or rest on your chest--wherever it is going to be most comfortable.

As your head becomes more and more comfortable, you will find yourself becoming more and more relaxed, going deeper and deeper into a beautiful state of deep, deep relaxation.

Let the muscles in your upper arms become more and more relaxed, more and more comfortable. Let them become loose, limp, and very, very relaxed.

Now your forearms, let the muscles in your forearms become loose, limp, and relaxed.

Now your hands--let them go loose, limp, and very, very relaxed.

Feel that deep relaxation passing over you--all through your arms, your shoulders, right down to the tips of your fingers.

Enjoy that feeling of deep, deep beautiful relaxation that is passing all over you.

Imagine if you would that your arms and hands feel like a ton weight as they rest there on your lap.

Just imagine them as heavy as lead--loose, limp, and very, very relaxed.

Give way to that feeling of deep relaxation which is spreading over your whole body from the tips of your toes right up to the top of your head.

Enjoy that drowsy, listless feeling.

It feels so good to be so tranquil, so peaceful and very, very relaxed.

Now see how beautifully relaxed you are now.

That's fine. You are really very relaxed.

I would like you to enjoy this very comfortable relaxed state for a while.

You will find that the next time you relax like this it will be even easier to do.

Enjoy this pleasant, comfortable state for a few more moments.

(Pause approx. one minute)

In a moment I will count from one to three and when I get to three you will be able to open your eyes feeling quite alert and refreshed, as if you had just awakened from a refreshing sleep.

One.....take a deep breath--gradually alerting.

Two.....exhale completely--becoming more alert.

Three..... open your eyes, feeling fine and relaxed, alert and wide awake.

(per John Duncan, 1973)



## Combined Treatment, Sessions Three to Six

Make yourself as comfortable as possible.

I want each of you to set the shock limit at the maximum you can tolerate. You are to increase the strength as time goes on if you become used to the initial level. To help you set the shock level, we will now proceed with five shock administrations. The tape will stop five times at each count and you are to press the reset button which will restart the tape and at the same time administer the shock. Start with the level at the bottom and increase it at each shock administration until you reach your own comfortable tolerance. Remember the shock should be aversive if it is to work, but not painful. There will be five stop-start sequences, starting now.

One...

(Auto-Pause: Shock)

Two...

(Auto-Pause: Shock)

Three...

(Auto-Pause: Shock)

Four...

(Auto-Pause: Shock)

Five...

(Auto-Pause: Shock)

Make yourself as comfortable as possible. Loosen any tight clothing such as belt, collar, shoes. Relax and get comfortable. Adjust the volume to your own desire...

I want you to choose a spot above and slightly behind your forehead so that you are almost, but not quite, looking through your eyebrows. Fix your gaze on this spot until your eyes close. You may become hypnotized more quickly than others, and your eyes may close sooner. Should this happen, pay attention only to those things I shall say that apply to you with your eyes closed. Ignore anything which I might say about your eyes which does not apply to you.

As you watch the spot, you will notice that your eyelids will begin to get very, very tired. . . They will start to feel very, very heavy, and as they get tired and heavy, you will notice that they will start to blink. . . They will start to blink more and more, more and more. . . As your eyelids grow more and more tired, they become heavier and heavier. You may notice that your eyes may start to water. As they grow heavier and heavier, you will find that it will become harder and harder to keep them open. . . As you relax, you may find that the spot tends to become blurred or it may tend to float around and change size. . . You may find that you have a tendency to swallow from time to time as you become more and more relaxed.

Your eyelids are becoming heavier and heavier, heavier and heavier, soon, very soon, your eyes will want to close to shut out the light and you will become much more comfortable and relaxed if you let your eyes close. They are getting very, very heavy. . . You are very, very tired. . . You can hardly keep them open. . . Heavier and heavier. . . Tired, so very tired.

That's right. Let them close now. Just let them close. . . If your eyes have not closed, then close them now.

You are probably feeling listless now, a drowsy listless feeling. It is very pleasant to feel so listless and drowsy and at ease. . . Let yourself relax even more, more and more relaxed. . . A feeling of well being gradually comes over you as though all your cares have rolled away. As though nothing matters, nothing at all. . . You are so listless now, so very, very listless. Give way to this feeling as it is so very, very pleasant. Just let yourself go drifting, deeper and deeper, deeper and deeper into hypnosis with every breath you take. With every breath you take, you become more and more relaxed.

Pay attention now only to the sound of my voice, nothing else seems to matter. . . Nothing will disturb you or bother you unless it is very, very important. Let yourself relax completely. Let every muscle go completely relaxed.

Your whole legs are starting to feel very loose, very, very, relaxed, and very, very comfortable. . . Let the chest muscles become loose, loose and very, very relaxed, and as the chest muscles become more and more relaxed, you will find yourself breathing more freely and easily and deeply. . . With each and every breath you take, you are becoming more relaxed, more and more comfortable, more and more deeply hypnotized.

Just let your head achieve a very, very comfortable position. Let it roll to one side or fall back on the chair or rest on your chest, wherever it is going to be most comfortable... As your head becomes more and more comfortable, you will find yourself becoming more and more relaxed, going deeper and deeper into a beautiful state of deep, deep hypnosis.

Feel that deep relaxation passing over you all through your arms, shoulders, right down to the tips of your fingers... Give way to that feeling of deep relaxation which is spreading over your whole body from the tips of your toes right up to the top of your head. Relax now, deeply and deeply, completely relaxed, deep, deep relaxation.

That's find... You are really very relaxed. You will find that the next time you relax like this, that you go into hypnosis like this, it will be even easier to do. Enjoy this pleasant comfortable state for a few moments now.

(Pause in voice instructions for approximately one minute.)

Very good. Now I want you to imagine yourself in a smoking situation, wherever you want. And you are to be smoking in this situation. Visualize it as clearly as possible. See it, not as if it is a movie, but see it and feel it coming from deep within yourself. When the image is as strong as you can make it, then you should press the restart button. The image that you are to create is your own personal image. The suggestions about to be given are only a guide. They are only a guide and are to be taken as such. The aversive images that will be suggested should be modified to your own personal aversion. You should choose something that you find despicable or unpleasant and you should work with those images. You will start now.

Imagine yourself in a smoking situation, possibly early in the morning, the first time in the day when you would smoke a cigarette. Imagine yourself desiring and needing that cigarette, wanting it badly, wanting it very badly. Imagine yourself taking that cigarette, taking it out of a package, putting it to your lips, and smoking it. Imagine yourself smoking that cigarette and enjoying it, and when that image of your first cigarette is as strong as possible, press the reset button.

(Auto--Pause)

Very good. Now I want you to continue imagining yourself in that smoking situation, and as you do this, imagine that cigarette turning into something vile and disgusting. Imagine the cigarette

changing into something vile and disgusting. Something that you would never put to your lips, something that you would never want to touch. Imagine this as strongly as you possibly can, and when you have imagined this as strongly as you possibly can, press the restart button.

(Auto-Pause: Shock)

Very good. Now let yourself relax completely, and imagine the same smoking situation, that very same smoking situation, without the need for a cigarette, no desire for a cigarette, no craving, feeling healthy and refreshed and at peace, very, very comfortable, no need or desire for a cigarette, and when that image is as strong as possible, again press the button.

(Auto-Pause)

Very good. Now let yourself relax completely. Deep, deep relaxation. Deeper and deeper into hypnosis, drifting, drifting, drifting completely comfortable, beautiful drifting and drifting, deeper, deeper, relax, deeper at ease, more and more deeply comfortable.

(Pause 10 sec.)

Now imagine yourself later on in the day. At some point along the day, desiring and needing a cigarette. Imagine yourself taking a cigarette. Taking it out of the package, manipulate it in your fingers. Notice the colour and texture of the cigarette. Place it to your lips. Light it, and smoke it. Inhale deeply. Inhale deeply and enjoy the cigarette. And as you are smoking the cigarette, allow the image to become stronger and stronger, and when that image becomes as intense as you can possibly make it at this moment, press the restart button.

(Auto-Pause)

Very good. And now continue imagining that smoking situation, and as you do, imagine your lungs and bronchial tubes turning brown and discoloured, becoming brown and discoloured and yellow as you have seen people's fingers become from heavy smoking. Imagine to yourself the amount of damage you are doing to your lungs with those cigarettes. Imagine it as strong as you possibly can. And then press the button.

(Auto-Pause: Shock)

Very good. Now continue imagining the same type of situation, only you do not need a cigarette, you do not desire a cigarette, there is no craving. Exhale completely and allow yourself to enjoy breathing. Imagine your lungs becoming clean, your bronchial tubes and lungs becoming pink and fresh, so that you can breathe easily and cleanly. Imagine that as your craving goes away, your health improves, you can breathe easier and cleaner, you can walk and run without becoming fatigued, things taste better and smell better. Imagine this now as strongly as you possibly can, and then press the button.

(Auto-Pause)

Very good. Now allow yourself to relax completely, relax, relax, going deeper and deeper, deeper and deeper into a complete state of relaxation and hypnosis. Completely at ease. Completely comfortable. Completely relaxed. Very, very deep, very comfortable. Comfortable, at ease, completely, completely at ease with yourself.

(Pause 10 sec.)

And now imagine yourself in another smoking situation. Later in the day, another place. An image of your own creation. Possibly a social situation, a party, a meeting with a group of friends, whatever. Imagine yourself in the situation, craving, desiring, needing a cigarette. Get a brand new package. Take the foil off the package, take a cigarette out. As you take out the new fresh cigarette, manipulate it, notice the colour, feel the texture of the tobacco underneath the paper. Place the cigarette to your lips. Light it and inhale, inhale deeply. As the image becomes as strong as possible, allow yourself only to inhale a few times and then press the button.

(Auto-Pause)

Good. Continue imagining the smoking situation, and as you imagine it, imagine the cigarette suddenly turning into something vile and despicable, something with a despicable taste, that is leaving a horrible, obnoxious taste in your mouth, an unforgettable taste. Imagine it as strongly as possible. And when the image is as strong as you can make it, press the button.

(Auto-Pause: Shock)

Good. Now I want you to throw away the cigarette, get rid of it, and as you do, continue to imagine yourself in the same situation having gotten rid of the cigarette, no longer needing a cigarette, no longer craving, desiring a cigarette. You don't need one, you don't want one. You are comfortable and relaxed in that same situation without smoking, without having to smoke. Imagine yourself in that situation, not needing a cigarette, as strongly as possible, and when the image is as strong as you can make it, press the button.

(Auto-Pause)

Very good. Allow yourself to relax completely. Allow yourself to become completely, completely relaxed and at ease, limp, limp and relaxed. Deep, deep relaxation, very deep, and comfortable. Feeling fine, well and healthy, relaxed...relaxed.

(Pause 10 sec.)

Very good. Now I want you to imagine another situation, possibly later on in the day, some other time and place, when you would want, where you would smoke. Imagine yourself as strongly as you can, let the image build up in your mind, let it become clear and strong. Take a cigarette, lighting it, putting it to your lips, and inhaling, inhaling deeply, build up the image, build it up as strongly as you possibly can. Then allow yourself only one puff of the cigarette, and then press the button.

(Auto-Pause)

Very good. And now imagine that cigarette, imagine that cigarette turning into something despicable in your lips, imagine it turning into a vile, vile, object, try to think back, try to imagine the most vile taste you have ever encountered. Try to imagine something that would be horrible to have touch your lips and imagine the cigarette becoming that. Imagine it so strongly that that cigarette, the fact that it is touching your lips, almost makes you want to retch. Almost, but not quite. And when it becomes as strong as you can conceivably make it at this time, press the button.

(Auto-Pause: Shock)

Great. Now get rid of the cigarette, continue to imagine yourself in the same situation, your taste buds becoming clear, you have gotten rid of the cigarette, you don't want to smoke any more. No

craving, no desire, no need for a cigarette. Your lungs are becoming clean and pure. Your bronchial tubes are becoming clean. Your health is improving because you are not smoking. You cannot even imagine why you ever started, why you ever even continued smoking. You do not wish to smoke, you cannot understand why you ever started. No need for a cigarette. And when the image is as powerful as you can make it, press the button.

(Auto-Pause)

Very good. Relax, let yourself relax completely, let yourself relax deeply, deeply and completely, all your muscles in your body becoming loose, drifting deeper, deeper, getting deeper and deeper hypnotized, becoming more and more relaxed, more relaxed, more and more comfortable.

(Pause 10 sec.)

Very good. And now I want you to imagine one final smoking situation, later in the day, another time, another place, anything that you may wish. Imagine yourself needing a cigarette, desiring one. You have to have one. Imagine this as strongly as you can. Imagine it very, very strongly. Take a cigarette, put it to your lips, and when you can imagine yourself putting it to your lips as strongly as possible, when the image is as strong as you can make it, press the button.

(Auto-Pause)

Very good. Now imagine that cigarette becoming vile and despicable. The taste is horrible, the taste makes you want to retch. Imagine this now as strongly as you can possibly make it.

(Auto-Pause: Shock)

Good. Continue to imagine yourself in the same type of smoking situation, not needing a cigarette now, not wanting one, not desiring one, feeling completely relaxed and at ease, and when the image is as strong as you can make it again, press the button.

(Auto-Pause)

Very good. Let yourself relax, deeply, deeply and comfortably, completely, completely relaxed, completely at ease. Completely comfortable, feeling good, very, very relaxed...very, very relaxed.

(Pause 15 sec.)

In a moment now, I will count from one to three... On the count of three, you will be wide awake and fully alert. One... becoming alert. Two...becoming more and more alert. Wider awake. Three...fully alert, wide awake and open your eyes in your own time, feeling comfortable and relaxed, completely at ease with a sense of well being.

Rewind the tape and return it. And remember your own personal commitment to quit smoking. Continue to use your cigarette counter. Please refrain from smoking at least one hour and preferably two prior to the next session.

Thank you and return the tapes.



## APPENDIX G

### SMOKING CLINIC

In partial fulfillment of a Master's Thesis in Psychology at Wilfrid Laurier University.

The clinic will last approximately four to six weeks, with two or three 30-45 minute meetings each week. The duration of the clinic depends on the frequency of the meetings.

The requirements are: a) must be over 18 years of age, b) have been a smoker for the past year, c) must inhale when smoking.

Interested individuals should be willing to devote eight hours of their time in an effort to quit smoking. The clinic will be starting in February 1977, so you should get your name down as soon as possible.

Please leave your name, address, and telephone number at Room 3-303, 3rd floor, Psychology Department. Or call 884-1970, Ext. 377.

All those interested will be sent a letter of information, a timetable, and questionnaire.

LEAVE YOUR NAME, ADDRESS, AND TELEPHONE NUMBER ,  
IMMEDIATELY AT ROOM 3-303 (across from the escalator) 3rd FLOOR,  
PSYCHOLOGY DEPARTMENT. OR CALL 884-1970, Ext. 377.

Smoking Clinic  
Dept. of Psychology  
Wilfrid Laurier University  
University Avenue  
Waterloo, Ontario

Attn: Herman Surkis

Dear Sir /Madam:

Thank you for responding and showing interest in the Smoking Clinic. This clinic is a research project in partial fulfillment of a Masters Degree in Psychology at Wilfrid Laurier University. This project is concerned with evaluating the effectiveness of various methods of controlling the cigarette smoking habit. Your cooperation and response can be of great value to yourself and to others in resolving this important health problem.

The purpose of this research is to evaluate by direct comparison the benefits of several treatment methods. The methods to be used have all shown themselves to be successful in the past; however, it should be noted that no known treatment is 100% effective, nor does any treatment work with all individuals. Therefore, no guarantees can be given as to the amount of success for any particular individual who participates in the research project.

In this research, individuals will be assigned on a random basis to one of the treatment situations. A method may include a mild electrical stimulation to a finger (self-controlled by the volunteer) or relaxation training and hypnosis. Again I wish to mention that the methods used are generally considered equally effective and, unless the research shows otherwise, there should be no advantage in being in one group as compared to another.

The entire program should only take approximately six weeks, with two or three meetings each week. The treatments will run approximately thirty to forty-five (30 to 45) minutes for a total of six to eight hours of time invested in quitting smoking. At the end of the clinic, participants will be asked to keep track of their non-smoking for thirty days to establish the stability of the results. At the end of the research, hopefully everyone will have improved their smoking habits. Their efforts will certainly contribute to helping others to quit smoking.

The clinic will be run during February and March of 1976, with the actual starting time to be announced as soon as schedules can be determined.

Enclosed you will find a chart that indicates the days of the week and various times. Please indicated by a one (1) your first choice of time and day that you would like to come to the clinic; also indicate by a two (2) your second choice. Remember to make at least two first choices of times you will be available for treatment as we wish to meet at least twice a week. Please fill in the questionnaires and return all the material immediately.

Please take a few minutes now and fill out the questionnaires and timetables, and mail them immediately so that we may begin as soon as possible.

If you have any further questions, call:

Thank you for participating,

Yours sincerely,

A handwritten signature in cursive script, reading "Herman Surkis".

Herman Surkis.

TIMETABLE

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Telephone \_\_\_\_\_ This is important, as you will be notified by  
telephone when and where to attend the  
meetings

8 a. m.					
9 a. m.					
10 a. m.					
11 a. m.	1				
12 noon					
1 p. m.	2				
2 p. m.		2	1		
3 p. m.					
4 p. m.					
5 p. m.					
6 p. m.					
7 p. m.					
8 p. m.					
9 p. m.					
	Monday	Tuesday	Wednesday	Thursday	Friday

The example shown indicates 1st choices of Mon. 11.00 a. m. and  
Wed. 2 p. m., with alternates of Mon. 1.00 p. m. and Tues. 2.00 p. m.

Please make your own choice of at least two (2) first and two alternate  
days and time.

WAIVER, RELEASE, AND INDEMNITY  
AGREEMENT

In consideration of permitting me, \_\_\_\_\_ to enrol in and participate in the "smoking clinic" given by Herman Surkis at the facility of Wilfrid Laurier University, in the City of Waterloo, county of Waterloo, in the Province of Ontario, beginning on the \_\_\_\_\_ day of \_\_\_\_\_, 1976, I hereby voluntarily release, discharge, waive, and relinquish any and all actions or causes of action for personal injury or mental anguish occurring to me arising as a result of engaging or receiving instructions in said activities however the same may occur and for whatever period said activities or instructions may continue. I, for myself, and my assigns, hereby release, waive, discharge, and relinquish any action, or causes of action, aforesaid, which may hereafter arise for me, and agree that under no circumstances will I prosecute, present any claim for personal injury or mental anguish against Herman Surkis personally or against Wilfrid Laurier University, its facilities, or any of its officers, instructors, or employees for any of said causes of action, whether the same shall arise by the negligence of any said persons, or otherwise. IT IS MY INTENTION BY THIS INSTRUMENT TO EXEMPT AND RELIEVE HERMAN SURKIS AND WILFRID LAURIER UNIVERSITY FROM LIABILITY FOR PERSONAL INJURY OR MENTAL ANGUISH CAUSED BY NEGLIGENCE.

I, for myself or assigns, agree that in the event any claim for personal injury or mental anguish shall be prosecuted against Herman Surkis and/or Wilfrid Laurier University, I shall indemnify and save harmless the same aforesaid from any and all claims or causes of action by whomever and whenever made or presented for personal injuries or mental anguish.

It is also understood that Herman Surkis and/or Wilfrid Laurier University cannot guarantee the success or benefit to be derived by participating in the activity and instruction of the "Smoking Clinic" and I am also aware that I may withdraw and cease participation in the aforementioned "Smoking Clinic" at any time that I may deem necessary.

I acknowledge that I have read the foregoing three paragraphs and have been fully and completely advised of any potential dangers, discomfort or harm, incidental to participating in and engaging in the activity and instruction comprising the "Smoking Clinic", and am fully aware of the legal consequences of signing this instrument.

Witness: \_\_\_\_\_ Participant: \_\_\_\_\_  
signature signature

Dated: \_\_\_\_\_ Signature of  
Parent or  
Guardian (where  
applicable) \_\_\_\_\_

## APPENDIX H



## SMOKING HISTORY QUESTIONNAIRE

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Phone \_\_\_\_\_ This is very important since you will be notified  
by phone when and where to attend the meetings.

Age \_\_\_\_\_ Years Smoked \_\_\_\_\_

How much do you smoke? (Please answer as realistically as possible)

Less than one pack per week \_\_\_\_\_ Almost one pack a week \_\_\_\_\_

1 1/2 - 3 packs per week \_\_\_\_\_ 1/2 pack per day \_\_\_\_\_

1 pack per day \_\_\_\_\_ More than 1 pack per day \_\_\_\_\_

Do you inhale? Yes \_\_\_\_\_ No \_\_\_\_\_

Have you ever tried to stop smoking before? \_\_\_\_\_

How long did you stop? \_\_\_\_\_

Why did you go back to smoking if you quit before? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Why did you start smoking originally? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Do your parents smoke? \_\_\_\_\_

Did they smoke when you were a child? \_\_\_\_\_

Do you presently live with someone else who smokes? \_\_\_\_\_

Who? \_\_\_\_\_

What do you feel smoking does for you? \_\_\_\_\_

\_\_\_\_\_

How dangerous do you personally believe smoking is to your health?

Explain. \_\_\_\_\_

\_\_\_\_\_

Why have you decided to quit smoking at this time \_\_\_\_\_

\_\_\_\_\_

Do you feel that you could quit without help? \_\_\_\_\_

Do you feel that you could quit with help? \_\_\_\_\_

Are you willing to make a commitment to attend all eight meetings?  
(The meetings will last approximately 45 minutes. )

\_\_\_\_\_

## SMOKING QUESTIONNAIRE

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Phone \_\_\_\_\_

Please rate yourself on the following situations for smoking:

- 0 - if you never smoke in this situation
- 1 - if you occasionally smoke in this situation
- 2 - if you usually smoke in this situation, but not essential
- 3 - if you need to smoke in this situation, painful not to

<u>Rating</u>	<u>Situation</u>
1. _____	when irritable
2. _____	when anxious or worried
3. _____	when angry
4. _____	when nervous
5. _____	when bored
6. _____	when you have to concentrate
7. _____	when watching television
8. _____	after physical exercise
9. _____	when reading
10. _____	when relaxing
11. _____	when happy or content
12. _____	when alone
13. _____	when drinking tea or coffee

14. \_\_\_\_\_ when drinking alcohol
15. \_\_\_\_\_ when in company
16. \_\_\_\_\_ when at a party
17. \_\_\_\_\_ when talking
18. \_\_\_\_\_ when with other smokers
19. \_\_\_\_\_ when among a group of non-smokers
20. \_\_\_\_\_ when in a "No Smoking" area
21. \_\_\_\_\_ when you wake up in the morning
22. \_\_\_\_\_ when in bed

Items used to obtain sub-score for each smoking situation:

Nervous-irritation	Items 1-6
Relaxation	Items 7-12
Social	Items 13 -18
Addictive-need	Items 19-22

## SMOKING QUESTIONNAIRE II

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Telephone \_\_\_\_\_

This questionnaire consists of statements made by different people to describe what smoking means to them. Do you feel this way? If so, how often? Circle only one number for each question, and answer every question.

---



---

	Always	Frequently	Occasionally	Seldom	Never
A. I smoke cigarettes in order to keep myself from slowing down	5	4	3	2	1
B. Handling a cigarette is part of the enjoyment of smoking it.	5	4	3	2	1
C. Smoking cigarettes is pleasant and relaxing	5	4	3	2	1
D. I light a cigarette when I feel angry about something	5	4	3	2	1
E. When I run out of cigarettes, I find it almost unbearable until I can get some more.	5	4	3	2	1
F. I smoke cigarettes automatically without even being aware of it.	5	4	3	2	1
G. I smoke cigarettes to stimulate myself, to perk myself up.	5	4	3	2	1

	Always	Frequently	Occasionally	Seldom	Never
H. Part of the enjoyment of smoking a cigarette comes from the steps I take to light up.	5	4	3	2	1
I. I find cigarettes pleasurable.	5	4	3	2	1
J. When I feel uncomfortable or upset about something, I light a cigarette.	5	4	3	2	1
K. I am uncomfortable aware of when I am not smoking.	5	4	3	2	1
L. I light a cigarette without realizing I still have one burning in an ashtray.	5	4	3	2	1
M. I smoke cigarettes to give me a lift.	5	4	3	2	1
N. When I smoke a cigarette, part of the enjoyment is watching the smoke as I exhale it.	5	4	3	2	1
O. I want a cigarette most when I am comfortable and relaxed.	5	4	3	2	1
P. When I feel blue or want to take my mind off cares and worries, I smoke a cigarette.	5	4	3	2	1
Q. I get a real gnawing hunger for a cigarette when I haven't smoke for a while.	5	4	3	2	1
R. I've found a cigarette in my mouth and didn't remember putting it there.	5	4	3	2	1
S. I find myself avoiding 'No Smoking' areas.	5	4	3	2	1
T. When out for the day or evening, I find myself asking for ashtrays.	5	4	3	2	1
U. When out or travelling, I tend to look for smoking areas.	5	4	3	2	1

Scoring

			Totals
<u>A</u>	<u>G</u>	<u>M</u>	= <u>          </u> Stimulation
<u>B</u>	<u>H</u>	<u>N</u>	= <u>          </u> Handling
<u>C</u>	<u>I</u>	<u>O</u>	= <u>          </u> Pleasurable Relaxation
<u>D</u>	<u>J</u>	<u>P</u>	= <u>          </u> Crutch: Tension Reduction
<u>E</u>	<u>K</u>	<u>Q</u>	= <u>          </u> Craving: Psychological Addiction
<u>F</u>	<u>L</u>	<u>R</u>	= <u>          </u> Habit

The numbers and totals have no absolute meanings but are an indicator of relative intensity of each function, and thus can be used for comparative analysis across groups. This will only give relative differences among groups, but it can point out any strong tendencies.

Stimulation: A high score indicates an increased sense of energy from smoking.

Handling: Something to do with the hand; the satisfaction of manipulating objects.

Relaxation: Many smokers feel that smoking relaxes them.

Tension Reduction: More than mere pleasurable relaxation; it is the management of unpleasant feelings such as tension, anxiety, anger, and shame by means of a cigarette.



Need: This is a complex pattern of rising and falling craving for a cigarette. It is a strong habituation that will make one walk, swim, or crawl a mile (for a Camel?) cigarette.

Habit: Someone who smokes without knowing it.

(as per Ross, Walter A. Readers Digest Press, 1974, pp. 29-34.

## FOLLOW-UP QUESTIONNAIRE

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

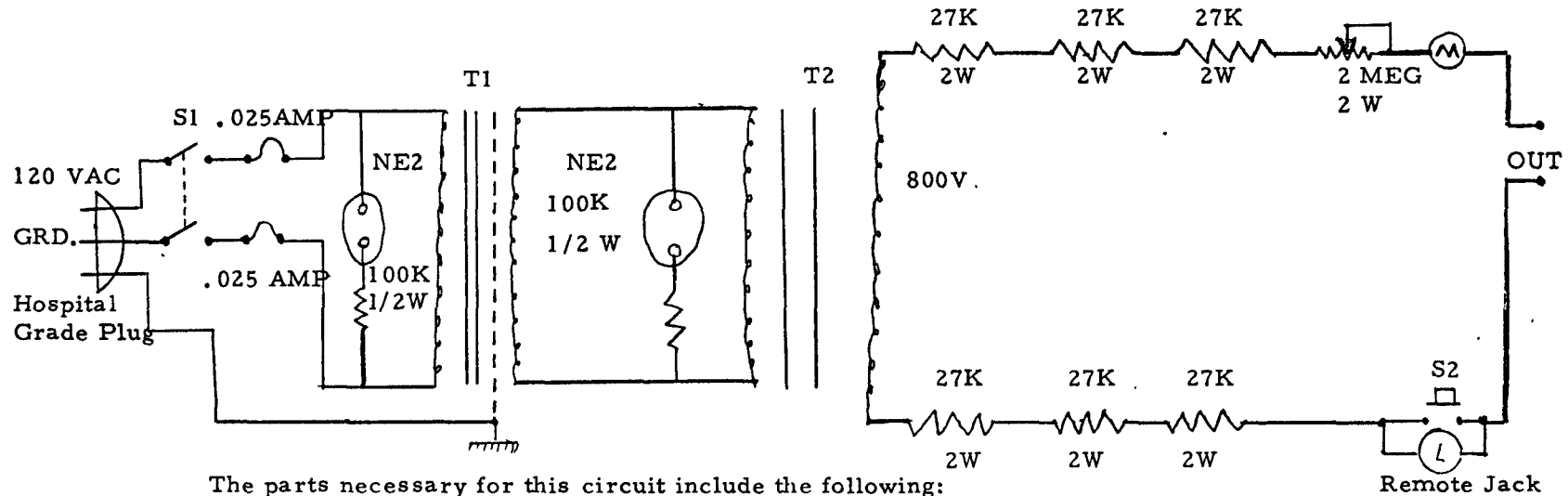
Phone \_\_\_\_\_

1. Have you smoked since our last session? Yes \_\_\_\_\_ No \_\_\_\_\_
2. If you answered yes to question 1:
  - A. how many? \_\_\_\_\_
  - B. How frequently? \_\_\_\_\_
  - C. are you smoking now? Yes \_\_\_\_\_ No \_\_\_\_\_
3. If you have not smoked since your treatment, do you crave cigarettes?  
Yes \_\_\_\_\_ No \_\_\_\_\_ Occasionally \_\_\_\_\_
4. Have you gained weight since you stopped smoking?  
Yes \_\_\_\_\_ No \_\_\_\_\_
5. If so, how much weight did you gain? \_\_\_\_\_
6. Have you lost weight since you stopped smoking?  
Yes \_\_\_\_\_ No \_\_\_\_\_
7. If so, how much weight did you lose? \_\_\_\_\_
8. Have you substituted any "oral" habit since you stopped smoking cigarettes, such as:
  - A. Cigars \_\_\_\_\_
  - B. Pipe \_\_\_\_\_
  - C. Chewing gum \_\_\_\_\_
  - D. Other \_\_\_\_\_
  - E. None \_\_\_\_\_
9. If you checked a category other than none in question 8, how frequently? \_\_\_\_\_
10. If you care to write any comment on the treatment and its results, please do not hesitate to do so. Any comments will be most welcome. Again, thank you for this information. (Please use the back of this sheet.)

# APPENDIX I

## APPARATUS USED IN AVERSION

### THERAPY



The parts necessary for this circuit include the following:

- |   |                                       |
|---|---------------------------------------|
| 1 UL approved, 1:1, shielded, isolation transformer | 1 hospital grade, 3 prong ground plug |
| 1 UL approved, shielded plate transformer (800V)    | 1 double pole, single throw switch    |
| 6 27K resistors (2W)                                | 1 push button                         |
| 2 100K resistors (2W)                               | 1 mA meter (0-5mA)                    |
| 2 NE-2 neon lamps                                   | 1 potentiometer 2 MEG (2W)            |
| 2 .025 A fuses                                      | 1 mini box                            |
|   | 1 remote jack                         |

(as per Siddall, Vargas, and Adesso, Behaviour Therapy, 1975, 6, 274-275.)

Figure . Diagram of shock generator used in the experiment.